

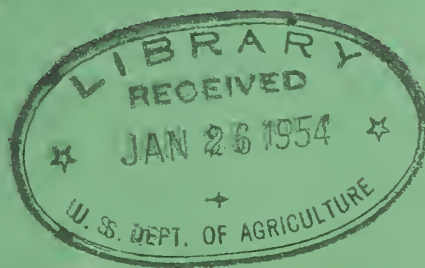
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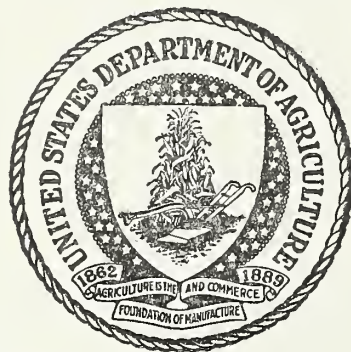
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**DESCRIPTION OF UNITS, SPECIFICATIONS,  
AND DRAWINGS FOR 7.2/12.5 KV LINE CONSTRUCTION**



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PART I. DESCRIPTION OF CONSTRUCTION UNITS  
(For Use in Preparing Contractor's Proposal)

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The proposal is to be made on a unit basis so that the Engineer may specify any combination of construction units that he may deem necessary. The various construction units that are included in this proposal, and upon which quotations are required, are defined by symbols and descriptions set forth in this part I. Separate assembly units are designated for each different arrangement which may be used in the construction of the Project. This proposal is based on a consideration of each unit in place and includes only the materials listed on the corresponding Construction Drawings.

1. Pole Unit. Consists of one pole in place. It does not include pole-top assembly unit or other parts attached to the pole. The first two digits indicate the length of the pole; the third digit shows the classification per A.S.A. (Example: 25-6 means a pole 25 feet long, class 6.)
2. Pole-top Assembly Unit. Consists of the hardware, crossarms, and their appurtenances, insulators, etc., except tie wire, required to support the primary conductors. It does not include the pole. Crossarm pins include 2 inches by 2 inches by 1/8 inch washer, nut, and locknut.
3. Guy Assembly Unit. Consists of the hardware and wire, and guy insulator where necessary. An overhead guy assembly consists of an overhead guy, a pole, and a down guy, each of which is listed separately. Guy guards are designated separately.
4. Anchor Assembly Unit. Consists of the anchor with rod complete, ready for attaching the guy wire.
5. Conductor Assembly Unit. Consists of 1,000 feet of a single conductor for primaries, secondaries, or both, and includes tie wires, sleeves for splicing, and armor rods with clips or armor wire where necessary. Tree trimming necessary for installing secondaries on poles not carrying primary line is included with the conductor assembly unit and shall be performed in accordance with the directions of the Engineer. The length of conductor shall be determined by taking the sum of all straight horizontal span distances between pole stakes or from center to center of the poles carrying the conductors. The conductor sizes listed are the manufacturer's designation.
6. Transformer Assembly Unit. Consists of the transformer, its protective equipment, and its hardware and leads with their connectors and supporting insulators and pins. This unit does not include the pole top, secondary, service, or grounding assemblies.
7. Secondary Assembly Unit. Consists of the hardware, insulators, etc., required to support the secondary conductors. It does not include the secondary conductors, or any hardware, insulators, etc., added to support the service conductors.
8. Service Assembly Unit. Consists of 1,000 feet of single conductor measured horizontally between conductor supports. The service shall be connected to the secondary or transformer and 2 feet of conductor shall be left for connecting to the consumer's service entrance, but in computing compensation to the Contractor only the horizontal distance between conductor supports shall be used. The service assembly unit includes tie wires, sleeves for splicing, connectors, and consumable materials. Tree trimming necessary for installing services is included with the service assembly unit and shall be performed in accordance with the directions of the Engineer. The hardware and insulators at the points of conductor support are designated as separate items.
9. Miscellaneous Assembly Unit. Consists of additional units needed in the Project for line construction but not otherwise listed in the Proposal.
10. Right-of-way Clearing Units.

R1-10R. The unit for purpose of quoting is 1,000 feet in length and 10 feet in width (to be measured 10 feet on one side of the pole line) of actual clearing of right-of-way. This includes clearing of underbrush, tree removal, and such tree trimming as may be required to leave an unobstructed right-of-way from the ground up on one side of the line of poles carrying conductors other than secondaries and services of the width specified. The length of actual clearing shall be measured in a straight line parallel to the line between poles and across the maximum dimension of foliage cleared (not trunk) projected to the ground line. All trees and underbrush across the width of the right-of-way shall be considered to be grouped together as a single length in measuring the total length of clearing. Spaces along the right-of-way in which no trees are to be removed or trimmed or underbrush cleared shall be omitted from the total measurement. All length thus arrived at, added together and divided by 1,000, shall give the number of 1,000-foot R1-10R units of clearing. This unit includes the removal or topping, at the option of the Contractor, of danger trees outside of the right-of-way when so designated by the Engineer. (Danger trees are defined as dead or lean-

ing trees which, in falling, will affect the operation of the line.) The Contractor shall not remove or trim shade, fruit, or ornamental trees unless so directed by the Engineer.

R1-20R. This unit is identical with R1-10R except that width is 20 feet (to be measured 10 feet on each side of the pole line).

R1-30R. This unit is identical with R1-10R except that width is 30 feet (to be measured 15 feet on each side of the pole line).

R1-40R. This unit is identical with R1-10R except that width is 40 feet (to be measured 20 feet on each side of the pole line).

11. Substation Assembly Unit. Consists of the complete substation ready for connection of the line conductors, as shown on the substation drawing.

## PART II. DESCRIPTION OF SYSTEM LINE CHANGES

The general heading of line changes applies to the changing of existing lines or portions thereof from their existing phasing, wire size, and type to new phasing, wire size, and type and the removal of existing lines or portions thereof and replacing with new lines in close proximity thereto. In general line changes involve three types of assembly units as follows:

Section H--Conversion assembly units;

Section I--Removal assembly units;

Section N--New construction assembly units on existing lines or in replacing lines.

The proposal is to be made on a unit basis so that the Engineer may specify any combination of assembly units that he may deem necessary. Work performed under these sections shall be performed under the special conditions of energization as set forth in the Proposal. The various assembly units that are included in this Proposal and upon which quotations are required, are defined by symbols and descriptions set forth in this part II.

### 1. Section H--Conversion Assembly Units.

Conversion assembly units are pole-top assemblies and cover the furnishing of all labor for changing an existing assembly unit to a new assembly unit, utilizing certain items of material of the existing assembly unit on poles to be left in place.

Where replacement of a pole is required, the existing pole and pole-top assembly will be removed under Section I and the new pole and pole-top assembly will be installed according to Section N and no H units will be involved.

Any materials removed from the existing assembly units which are not required in the construction of the conversion assembly unit, approved for reuse by the Engineer, shall be reused by the Contractor in the construction of other assembly units called for in the Construction Contract.

The Contractor will be charged by the Owner for the full value of all material items removed under this section at the value shown in Table A. Such charges will be placed against the Contractor as the material is removed.

The material that is removed may be utilized in the construction of new assembly units in the prosecution of this Contract or returned to the Owner's warehouse at the option of the Engineer. Material that is reused will be credited to the Contractor at the time it is reinstalled. Material not used and not damaged in handling will be credited to the Contractor at the time it is returned to the warehouse. The Contractor will be allowed full credit at the values as shown in Table B for all material items used and for all material items returned to the Owner which, in the opinion of the Engineer, were not damaged by the Contractor in removal and handling even though the materials may not be reusable for reasons of obsolescence.

Conversion assembly units are specified by the prefix H with the new construction assembly unit designation shown first and the existing assembly unit designation shown last. For example, an H B1-A1 signifies the conversion of an existing A-1 assembly unit to a B-1 assembly unit (as was defined in the description of construction assembly units). In this instance the Contractor utilizes the existing pin-type insulator, single upset bolt and neutral spool and installs the additional cross-arm, crossarm pins, braces, machine bolt, carriage bolts, lag screw, and insulator supplied by the Owner required for the new unit. The Contractor transports the pole-top pin and two machine bolts to the warehouse or reuses them on the project as directed by the Engineer.

The Conversion assembly units also include the furnishing of all labor in the transferring, re-sagging, and retying of conductors from one position on the pole to a different position on the pole where such transfers are required. Where replacement of conductor is required, the existing conductor will be removed under Section I and the new conductor installed under Section N.

The Contractor's proposal form for conversion assemblies is divided into three subsections.

- a. Subsection H (C-A). Conversion of single-phase assemblies to three-phase assemblies as described:

Unit	Description
H (C1-A1)	(To be filled in by Engineer, i.e., conversion of existing A-1 on pole to C-1.)
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	

- b. Subsection H (B-A). Conversion of single-phase assemblies to V-phase assemblies as described:

Unit	Description
H (B1-A1)	(To be filled in by Engineer, i.e., conversion of existing A-1 on pole to B-1.)
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	

- c. Subsection H (C-B). Conversion of V-phase assemblies to three-phase assemblies as described:

Unit	Description
H (C1-B1)	(To be filled in by Engineer, i.e., conversion of existing B-1 on pole to C-1.)
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	
H _____	









## 2. Section I--Removal Assembly Units.

Removal assembly units cover the furnishing of all labor for the removal of existing units of construction from existing lines, disassembling into material items, and all labor and transportation for the returning of all materials to the warehouse of the Owner in an orderly manner or transporting elsewhere to the site of the project for reuse in the prosecution of this Contract as approved by the Engineer.

The Contractor will be charged by the Owner for the full value of all materials removed under this section at the value shown in Table C. Such charges will be placed against the Contractor as units are removed.

Of the materials listed in Table C to be removed from existing lines, certain materials will be reused in the construction of the Project. Such materials to be reused are listed in Table C-1. Materials other than those listed in Table C-1 shall, if not damaged in handling, be returned to the Owner for full credit at the values shown in Table D. The Contractor will be allowed full credit for all material items, other than those listed in Table C-1, returned to the Owner which, in the opinion of the Engineer, were not damaged by the Contractor in removal and handling even though the materials may not be reusable for reasons of obsolescence or deterioration. Such credits shall be allowed the Contractor as materials are returned to the Owner's warehouse.

The Contractor shall not receive payment for any removal units until he shall have returned the materials removed to the Owner or the materials shall have been certified for reuse in the construction of the Project by the Engineer.

The unit removal prices shall include all labor required to reinstall in accordance with specifications any conductors temporarily detached. The Contractor will reinstall at his own expense any other units removed by him for his own convenience.

The removal units are specified by the prefix I and followed by the assembly unit designation of existing assembly unit to be removed. For example, an I A1 signifies the removal of an A1 assembly unit. The following special notes apply to specific removal units:

a. Poles. All poles of the same height, regardless of pole class, are designated by the same unit. Thus an I 30-foot pole signifies the removal of a 30-foot pole of any class. The contractor is not required under this unit to remove from the pole any ground wire or pole numbering attached to the pole. This unit includes the refilling and tamping of holes in a workmanlike manner unless they are to be reused.

b. Pole-top Assemblies. The unit for removal of pole-top assemblies is designated by the prefix I followed by the symbol of the assembly to be removed, thus I A5-4R signifies the removal of an A5-4R assembly unit.

The unit of removal of pole-top assemblies includes any necessary handling, resagging, and retying of conductors in those cases where an existing pole-top assembly will be removed and replaced by a new pole-top assembly and where any existing conductor is to be reused.

The unit of removal of pole-top assemblies also includes any holding or handling of mainline or tap conductors at tap lines, angles, and deadends where such is involved, and the reinstalling of such conductor in accordance with the conductor specifications herein; for example, an I A5-4R will include the disconnection of the tap conductors, snubbing off the tap line at the nearest practical point and the reconnection and resagging of these tap conductors if necessary to the new tap assembly when installed. The new unit of construction, however, will be specified separately in Section N.

c. Guys. All guys regardless of length, type of attachment, or size of guy strand are specified by the same unit; thus an I-E signifies the removal of any guy.

d. Anchors. Only anchor rods are to be removed by the Contractor in anchor removal units. The anchors will be left in the ground; thus an I-F signifies the removal of any anchor rod.

e. Conductor. The conductor removal unit covers the removal of 1,000 feet of conductor and reeling or coiling it in a workmanlike manner in such a way that it can be reused by the Contractor or the Owner. The Owner will furnish to the Contractor reels for the reeling of such conductor if it is to be returned to the Owner's warehouse on reels. All jumpers, tie wires, armor rods, and other conductor accessories removed will be returned to the Owner. The removal unit for each size of conductor is shown by the prefix I followed by D and the conductor type; thus an ID-6A-CWC signifies the removal unit for 1,000 feet of 6A copperweld conductor.

f. Transformers. The unit for removal of transformer assembly units is divided into two sections, (1) Conventional Transformer Assembly, and (2) Self-protected Transformer Assembly. Only one unit is specified for each type, and all sizes of transformers from 1 to 15 kva within each group will be covered by the same unit. "Self-protected" refers to transformers where all protective equipment is mounted on or within the transformer. "Conventional" refers to transformers where protective equipment is mounted separately from the transformer. The unit is designated by the prefix I followed by the description of the unit to be removed; thus I-G Conventional signifies the removal of a conventional transformer assembly for any size transformer from 1 to 15 kva.

g. Secondary Units. The unit for removal of secondary assemblies includes, in addition to the removal of the assembly itself, all necessary handling such as untying, resagging, and retying of secondary conductor where existing secondary conductor is to be reused.

In addition, the unit for removal of the secondary assembly includes the handling or holding of any conductor at tap lines where such is involved, and the reinstalling of such tap conductor in accordance with the conductor specifications herein. The unit removal of secondary assemblies is designated by the prefix I followed by the symbol of the secondary assembly involved; for example, an I-J6 signifies the removal of a J6 secondary assembly. In this instance if a tap line is involved, it includes the disconnection of the tap conductor, snubbing off the tap line at the nearest practical point and the reconnection and resagging of the tap conductor to the new secondary assembly when installed; such new unit of construction however being separately specified under Section N.

h. Service Unit. The service removal unit is designated by the prefix I followed by the symbol of the service unit to be removed; thus an IK14 signifies the removal of a K14 service assembly unit.

No separate removal units will be specified for service wire units except where complete removal is required. Where service conductor must be dropped to provide for removal and installation of service attachment units, the labor of dropping and reinstalling service conductor, together with any additional service conductor and sleeves to complete the reinstallation thereof is included in the unit for removal of the service wire attachment.

In the above instance the IK14 will include the disconnecting and reconnecting of the service wire according to specifications.

i. Miscellaneous Units. The miscellaneous removal unit is designated by the prefix I followed by the symbol of the unit to be removed; thus an I-M3-1R signifies the removal of an M3-1R assembly unit. (The Engineer is to furnish under this section any detail descriptions of Miscellaneous removal units as are required.)

The units as covered by this Section I, Removal Assembly Units, are generally the same as those described in part I, Description of Construction Units. Where such description is not correct or sufficiently explicit, the following descriptions will apply:

Unit	Description
I	(To be filled in by Engineer.)











3. Section N--New Construction Assembly Units on Existing Lines or in Replacing Lines.

The purpose of this section is to list complete new units of construction where such units are to be added to existing lines or installed in replacing lines.

The units as covered by this section are the same as the units described in part I, Description of Assembly Units, except that these units are prefixed by the letter N.

For example, an N40-6 unit covers the furnishing of all labor for the installation of a 40-6 pole either in an existing distribution line being operated by the Owner or in a new line being constructed to replace an existing distribution line being operated by the Owner.

# PART III. SPECIFICATIONS FOR CONSTRUCTION

## 1. General.

All construction work shall be done in a thorough and workmanlike manner in accordance with the Staking Sheets, Plans and Specifications, and Construction Drawings, and shall be subject to the acceptance of the Engineer and the Administrator.

Deviations from the Staking Sheets, Plans and Specifications, and Construction Drawings shall not be permitted except upon the written permission of the Engineer given with the approval of the Administrator.

## 2. Scope.

### Miles of line

#### Primary lines:

	Volts	Miles
Single-phase two-wire . . . . .	_____	_____
V-phase three-wire . . . . .	_____	_____
Three-phase four-wire . . . . .	_____	_____

#### Secondary:

Two-wire secondary on secondary poles . . . . .	_____	_____
Three-wire secondary on secondary poles . . . . .	_____	_____

#### Services:

Two-wire services . . . . .	_____	_____
Three-wire services . . . . .	_____	_____
Total miles of line . . . . .	_____	_____

### Underbuild

One-wire secondary . . . . .	_____	_____
Two-wire secondary . . . . .	_____	_____
Total miles of underbuild . . . . .	_____	_____

### Line changes

Single-phase to V-phase . . . . .	_____	_____
Single-phase to three-phase . . . . .	_____	_____
V-phase to three-phase . . . . .	_____	_____
_____ . . . . .	_____	_____
_____ . . . . .	_____	_____
Total miles . . . . .	_____	_____

### Removals

Single-phase two-wire . . . . .	_____	_____
V-phase three-wire . . . . .	_____	_____
Three-phase four-wire . . . . .	_____	_____
Total miles . . . . .	_____	_____

### Miscellaneous

#### Services:

	Number
Two-wire to meter . . . . .	_____
Three-wire to meter . . . . .	_____
Three-phase to meter . . . . .	_____

#### Secondaries to meter:

Two-wire secondary to yard pole . . . . .	_____
Three-wire secondary to yard pole . . . . .	_____
Three-phase secondary to yard pole . . . . .	_____

#### Substations:

Kva _____ Voltage _____ Type _____	_____
Kva _____ Voltage _____ Type _____	_____
Clearing units . . . . .	_____
Consumers . . . . .	_____

The total length of the project lines shall be determined by taking the sum of all straight horizontal span distances between pole stakes or from center to center of poles carrying conductors, plus the length of service drops measured horizontally from center of last pole to the point of attachment to the consumer's building.

The Project is located in the County or Counties of \_\_\_\_\_,  
State of \_\_\_\_\_. Said lines are to be connected to the primary  
system of \_\_\_\_\_  
at the following locations \_\_\_\_\_

All of the above is as included within the terms of the Loan Contract.

### 3. Drawings and Maps.

The key map showing the source of power supply and the general route and location of all primary lines in this Project, and the detail maps for each individual primary route, are listed separately hereinafter and are part of these Plans and Specifications and no deviations from these maps shall be made without the approval of a Construction Contract Amendment by the Administrator. The Construction Drawings, showing the types of construction to be used for the various conditions along the lines, also are listed separately hereinafter and are part of these Specifications.

### 4. Staking of Line.

The Engineer shall determine the locations and types of all pole units and other unit assemblies to be installed. As a part of the release for construction, the Contractor shall receive from the Engineer five complete sets of staking sheets and a reference sketch showing the location of the poles and other unit assemblies.

### 5. Distributing Poles.

In distributing the poles, large, choice, close-grained poles shall be used for transformer, dead-end, angle, and corner poles.

### 6. Pole Setting.

The minimum depth for setting poles shall be as follows:

Length of Pole (feet)	Setting in Soil (feet)	Setting in All Solid Rock (feet)
20	4.0	3.0
25	5.0	3.5
30	5.5	3.5
35	6.0	4.0
40	6.0	4.0
45	6.5	4.5
50	7.0	4.5
55	7.5	5.0
60	8.0	5.0

"Setting in Soil" specifications shall apply:

- Where poles are to be set in soil.
- Where there is a layer of soil of more than two (2) feet in depth over solid rock.
- Where the hole in solid rock is not substantially vertical or the diameter of the hole at the surface of the rock exceeds approximately twice the diameter of the pole at the same level.

"Setting in All Solid Rock" specifications shall apply where poles are to be set in solid rock and where the hole is substantially vertical, approximately uniform in diameter and large enough to permit the use of tamping bars the full depth of the hole.

Where there is a layer of soil two (2) feet or less in depth over solid rock, the depth of the hole shall be the depth of the soil in addition to the depth specified under "Setting in All Solid Rock" provided, however, that such depth shall not exceed the depth specified under "Setting in Soil."

On sloping ground, the depth of the hole always shall be measured from the low side of the hole.

All holes shall be backfilled with soil or small rock and all pole holes in rock shall be inspected and approved in writing by the System Engineer before being backfilled.

Poles shall be set so that alternate crossarm gains face in opposite directions, except at terminals and deadends where the gains of the last two poles shall be on the side facing the terminal or deadend. On unusually long spans, the poles shall be set so that the crossarm comes on the side of

the pole away from the long span. Where pole top pins are used, they shall be on the opposite side of the pole from the gain, with the flat side against the pole.

#### 7. Pole Alinement and Raking.

Poles shall be set in alinement and plumb except at corners, terminals, angles, junctions, or other points of strain, where they shall be set and raked against the strain so that the conductors shall be in line. Poles shall be raked against the conductor strain not less than 1 inch for each 10 feet of pole length nor more than 2 inches for each 10 feet of pole length after conductors are installed at the required tension.

#### 8. Tamping.

Poles must be thoroughly tamped the full depth. Excess dirt must be banked around the pole.

#### 9. Grading of Line.

When using high poles to clear obstacles such as buildings, foreign wire crossings, railroads, etc., there shall be no upstrain on pin-type insulators in grading the line each way to lower poles.

#### 10. Guys.

The Engineer shall determine all guy locations and specify the type of guy. Guys shall be placed before the conductors are strung and shall be attached to the pole as shown in the Construction Drawings.

#### 11. Anchors.

All anchors and rods shall be in line with the strain and shall be so installed that approximately 6 inches of the rod remain out of the ground.

When a cone anchor is used, the hole, after the anchor has been set in place, shall be backfilled with coarse crushed rock for 2 feet above the anchor, tamping during the filling.

The setting of each anchor as regards depth, position, and expansion shall be inspected by the Engineer and the Engineer's approval given in writing before the anchor hole shall be backfilled.

All anchors must be thoroughly tamped the full depth of the hole.

#### 12. Conductors.

Conductors must be handled with care. Conductors shall not be tramped on or run over by vehicles. Each reel shall be examined and the wire shall be inspected for cuts, kinks, or other injuries. Injured portions shall be cut out and the conductor spliced. The conductors shall be pulled over suitable rollers or stringing blocks properly mounted on pole or crossarm if necessary to prevent binding while stringing.

The neutral conductor should be maintained on one side of the pole (preferably the road side) for tangent construction and for angles not exceeding 30 degrees.

With pin-type insulators the conductors shall be tied in the top groove of the insulator on tangent poles and on the side of the insulator away from the strain at angles. Pin-type insulators shall be tight on the pins and on tangent construction the top groove must be in line with the conductor after tying in.

For neutral and secondary conductors on poles, insulated brackets (Material Item da) may be substituted for the single and double upset bolts on angles of 0° to 5° in locations known to be subject to considerable conductor vibration.

#### 13. Splices, Deadends, Taps, and Jumpers.

Conductors shall be spliced and deadended as shown on the Construction Drawings. There shall be not more than one splice per conductor in any span and splicing sleeves shall be located at least 10 feet from the conductor support. No splices shall be located in Grade B crossing spans and preferably not in the adjacent spans.

Jumpers and other leads connected to line conductors shall have sufficient slack, as shown on the Construction Drawings, to allow free movement of the conductors. Where slack is not shown on these drawings it will be provided by at least two bends in a vertical plane, or one in a horizontal plane, or the equivalent.

When connecting conductors of different metals, connectors which cause no galvanic action shall be used.

With all conductors, connectors and hot-line clamps shall be installed as shown on guide drawings, near the conductor support. On all hot-line clamp installations, the clamp shall be installed so that it is permanently bonded to the load side of the line, allowing the jumper to be deenergized when the clamp is disconnected. This applies in all cases, even where the line layout is such that the tap line is in actuality the main line back to the power source.

#### 14. Tie Wires, Etc.

All ties shall be in accordance with the Construction Drawings.

#### 15. Sagging of Conductors.

Conductors shall be sagged in accordance with the Conductor Manufacturer's recommendations which shall be furnished to the Contractor by the Engineer. When so specified in the Proposal conductors shall be prestretched and then sagged in accordance with the proper final sag and tension charts supplied by the conductor manufacturer and furnished to the Contractor by the Engineer.

All conductors shall be sagged evenly, and if prestretched, a tension indicator approved by the Engineer shall be used. The stringing and sagging tensions shall be supplied by the Engineer.

The air temperature at the time and place of stringing shall be determined by a certified etched glass thermometer.

The sag of all conductors after stringing shall be in accordance with the Conductor Manufacturer's recommendations, except that a maximum increase of 3 inches of the specified sag in any span will be acceptable: Provided, however, that under no circumstances will a decrease in the specified sag be allowed. While it is the responsibility of the Project Engineer to so design the line that the required clearances are obtained, the Contractor shall not be relieved from its responsibility of properly sagging conductor as above stated.

#### 16. Clearing Right-of-way.

In preparing the right-of-way, trees shall be removed, underbrush cleared, and trees trimmed so that the right-of-way, except for tree stumps which shall not exceed \_\_\_\_\_ in height, shall be clear from the ground up and of the width specified in the Proposal and Construction Agreement. Trees fronting each side of the right-of-way shall be trimmed symmetrically unless otherwise directed by the Engineer. Dead trees beyond the right-of-way which would strike the line in falling shall be removed. Leaning trees beyond the right-of-way which would strike the line in falling and which would require topping if not removed may be removed or topped at the option of the Contractor except that the Contractor shall trim and not remove shade, fruit, or ornamental trees unless otherwise directed by the Engineer.

Trees that are felled shall be cut to commercial wood length and left on the side of the right-of-way for the landowner. Commercial wood length means the length designated by the Engineer but in no case shall it be required to be less than \_\_\_\_\_ (\_\_\_\_\_) feet. Brush, branches, and refuse shall, without delay, be disposed of by such of the following methods as the Engineer will direct (Engineer to strike out methods not to be used)

- a. Burned.
- b. Removed from the vicinity of the right-of-way.
- c. Piled on one side of the right-of-way in such manner as not to obstruct roads, ditches, drains, etc.

---

(Engineer)

(Date)

All right-of-way operations shall be carried out as directed by the Engineer in a manner to preserve symmetrical appearance and in accordance with the Construction Drawings.

#### 17. Services.

The span length of any covered wire shall not exceed 150 feet. Service conductors shall be so installed as not to obstruct the climbing space. There shall be not more than one splice per service conductor in any span, and splicing sleeves shall be located at least 10 feet from the conductor support.

Conductors shall be sagged in accordance with instructions which shall be furnished to the Contractor by the Engineer.

18. Grounds.

Ground rods shall be driven full length in undisturbed earth in accordance with the Construction Drawings. The top shall be at least 12 inches below the surface of the earth. The ground wire shall be attached to the rod with a clamp and secured to the pole with staples. The staples on the ground wire shall be spaced 2 feet apart except for a distance of 8 feet above the ground and 8 feet down from the top of the pole where they shall be 6 inches apart.

The transformer case, neutral wires, and lightning-protective equipment shall all be attached to a common ground wire.

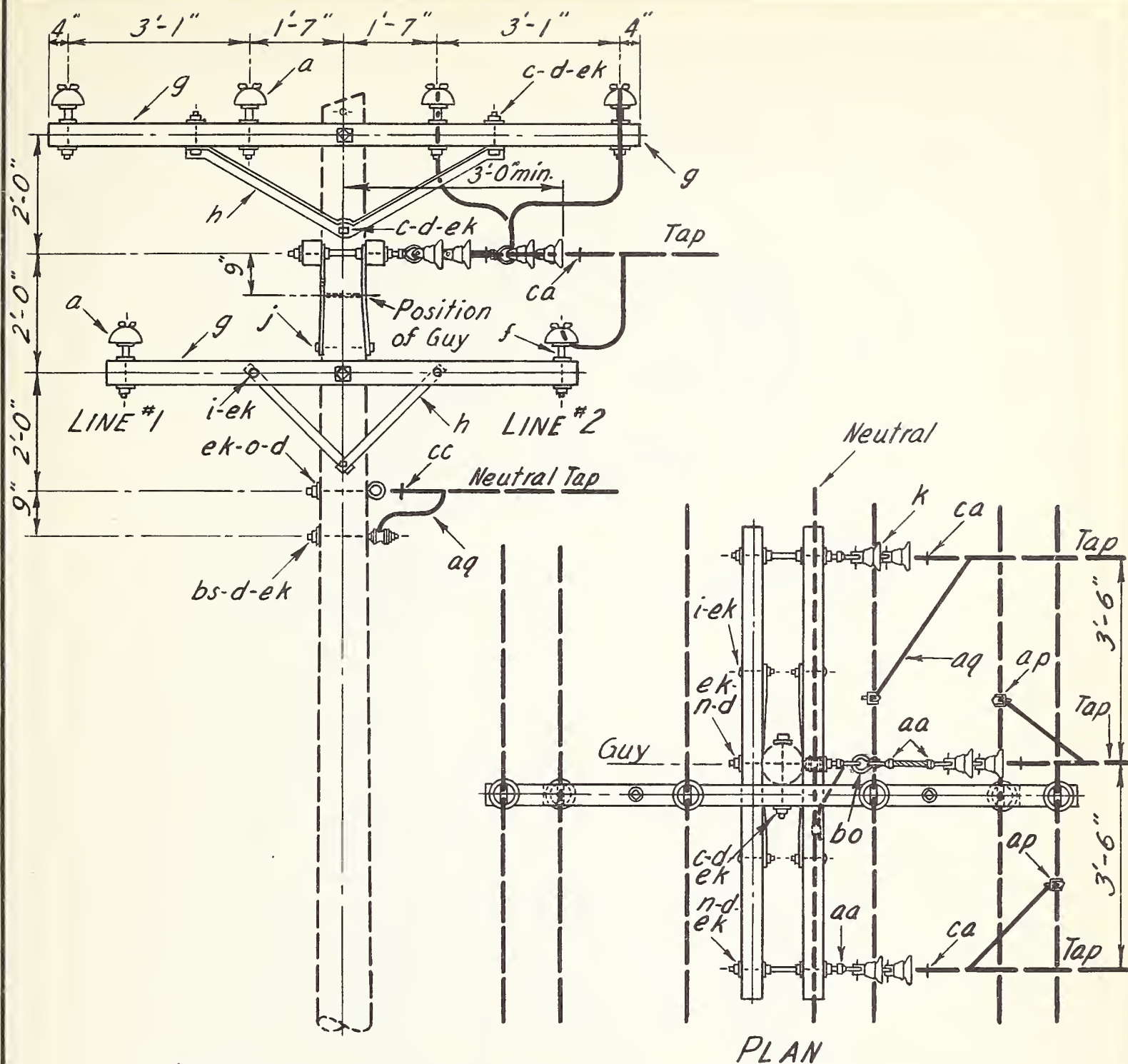
19. Miscellaneous.

Sufficient safe, cool, drinking water and an adequate first-aid kit must be provided on every work truck. Adequate safety equipment and construction tools for the workmen shall be provided by the Contractor.

#### PART IV. CONSTRUCTION DRAWINGS

The Construction Drawings for this Project are attached and follow.





**NOTE:**

Locknuts, item "ek" shall be installed on all bolts as illustrated above. Although not now included in the material list of the Construction Contract drawings, it is required that this extra item shall be supplied, and installed in the quantities listed below.

ITEM	NO. REQ'D. EACH BOLT	ITEM	NO. REQ'D. EACH BOLT
Machine bolts	1	Clevis bolts	1
Carriage bolts	1	Single upset bolts	1
Eye bolts	1	Double upset bolts	1
Double arm bolts	4	Thimbleye bolts	1

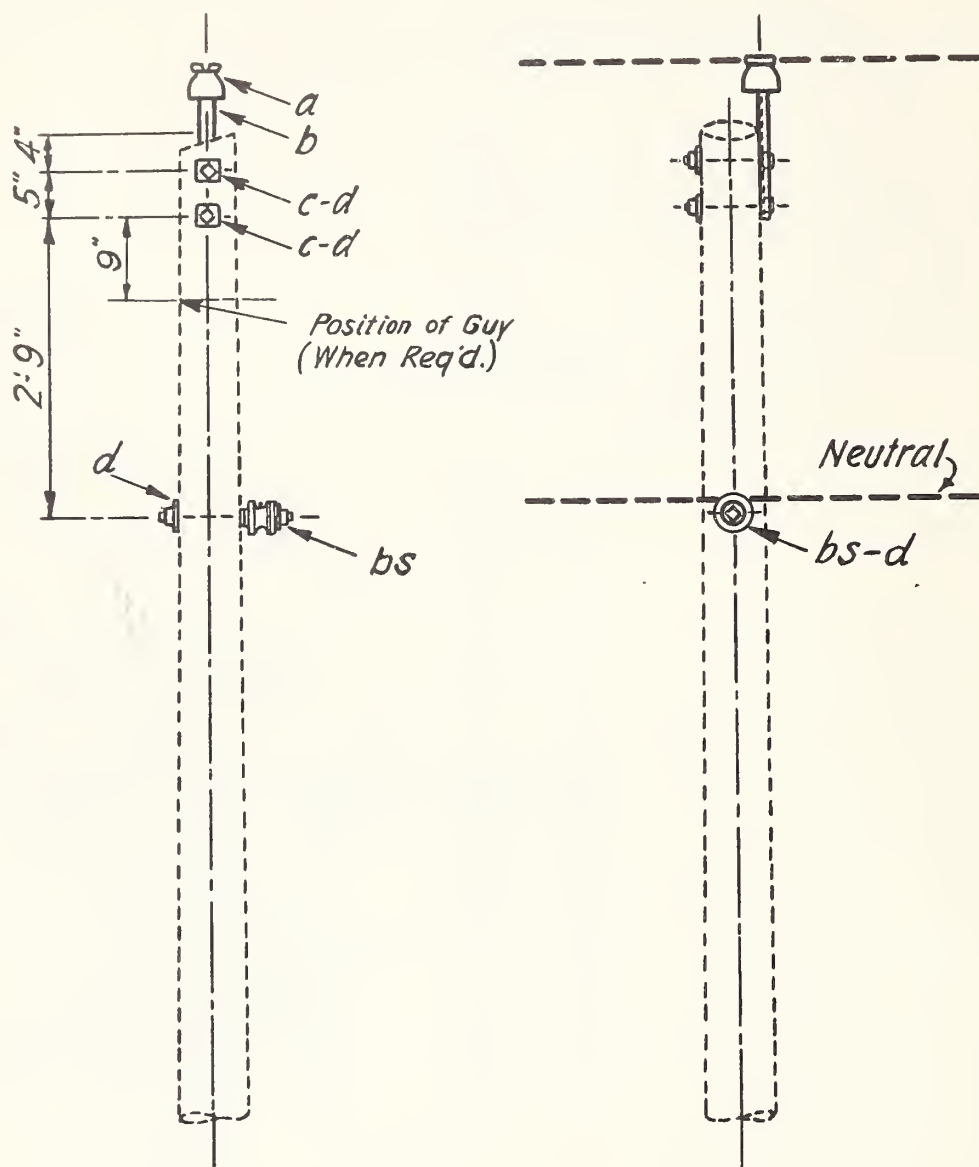
**LOCKNUT ASSEMBLY GUIDE**

Scale: 3/8"=1'-0"

Date: Dec. 6, 1948

No. REVISION DATE:

A0



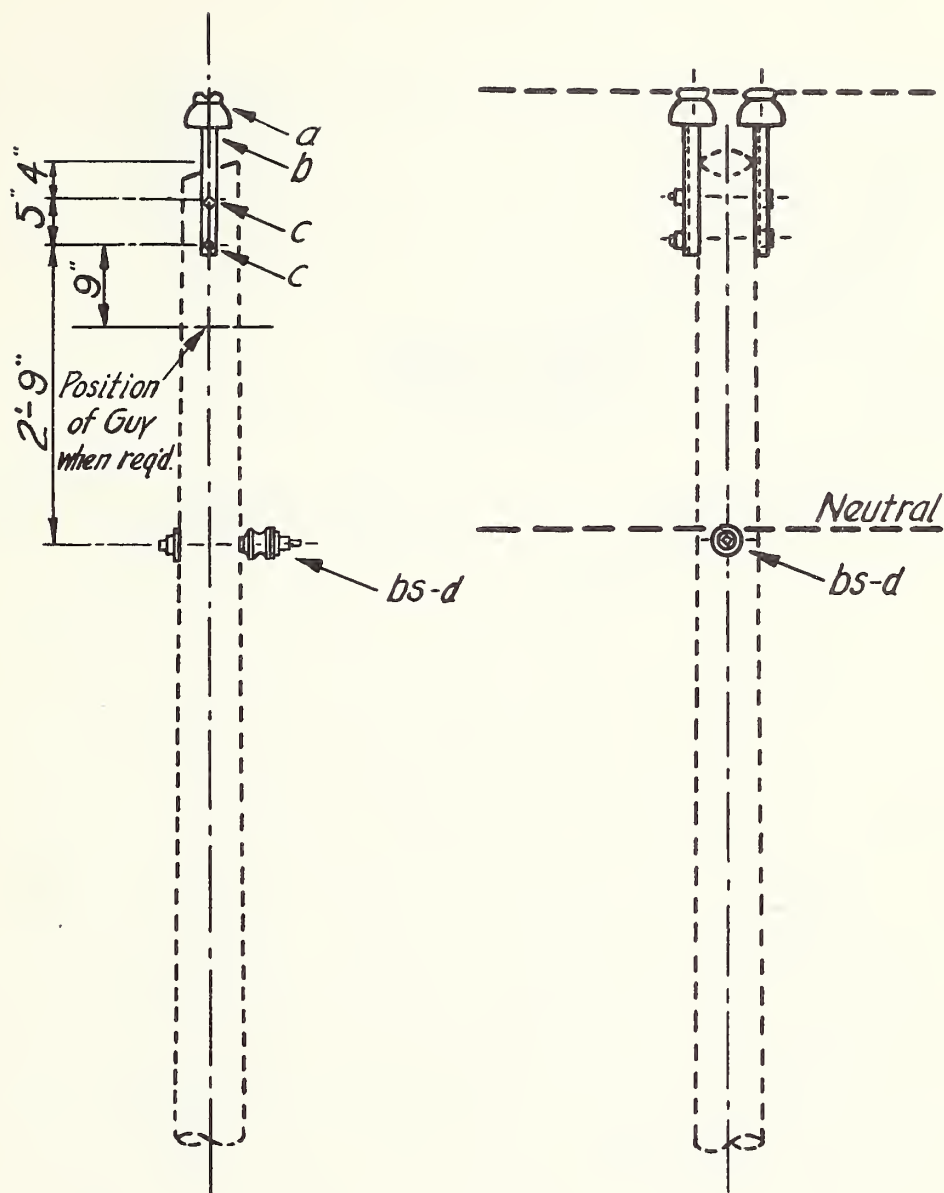
ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
a	1	Insulator, pin type	d	3	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole
b	1	Pin, pole top, 15"	bs	1	Bolt, single upset, insulated
c	2	Bolt, machine, 5/8" req'd. length			

.....KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUND  
 VERTICAL CONSTR. - 0° TO 5° ANGLE, SINGLE PRIMARY SUPPORT  
 Scale: 1/2" = 1'-0"

Date:

NO. REVISION DATE:

A1



ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
a	2	Insulator, pin type	d	1	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole
b	2	Pin, pole top, 15"	bs	1	Bolt, single upset, insulated
c	2	Bolt, machine, 5/8" x req'd. length			

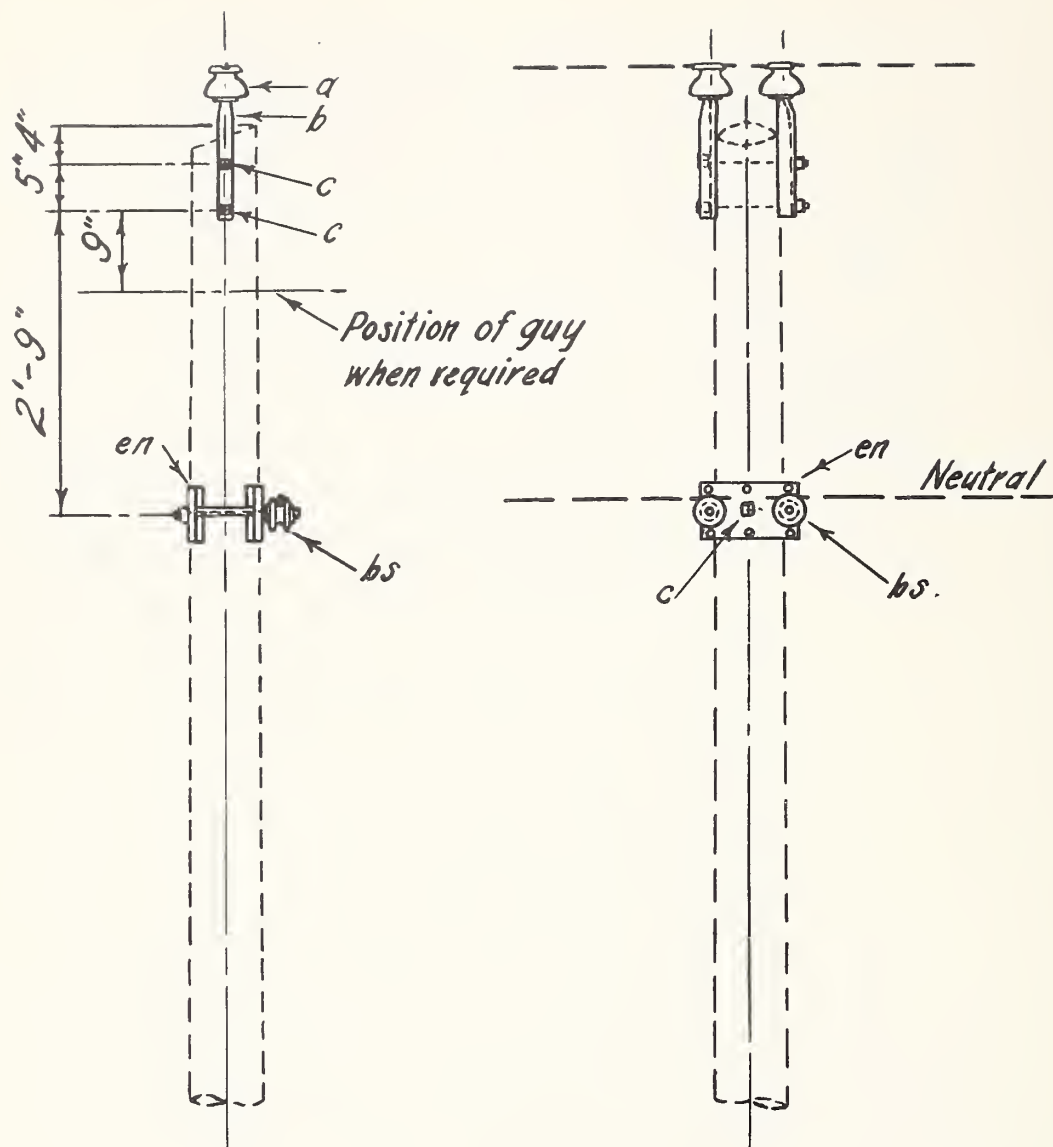
.....KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
VERTICAL CONSTR.-0° TO 5° ANGLE, DOUBLE PRIMARY SUPPORT

Scale: 1/2" = 1'-0"

Date:

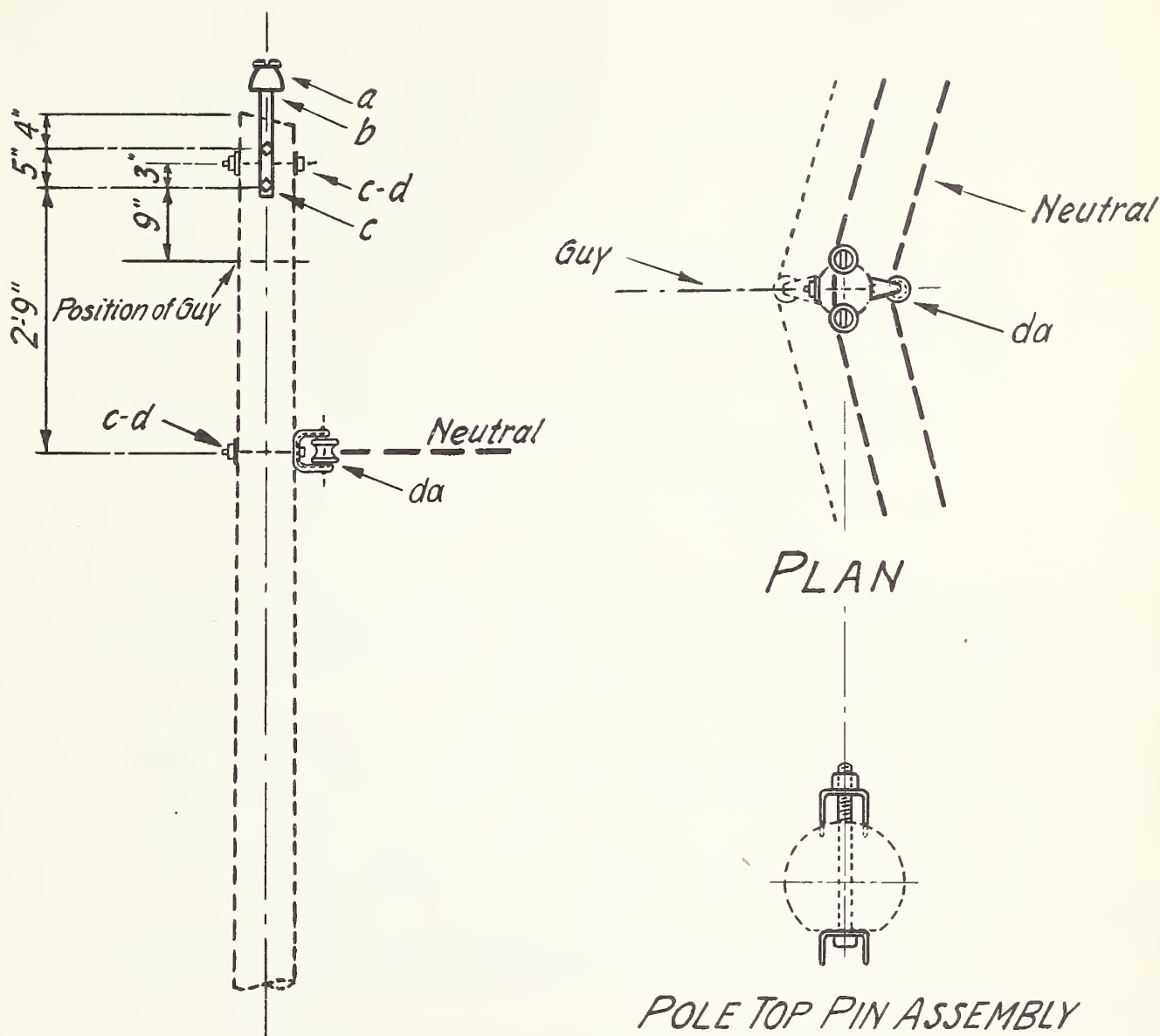
NO. REVISION DATE:

A1-1



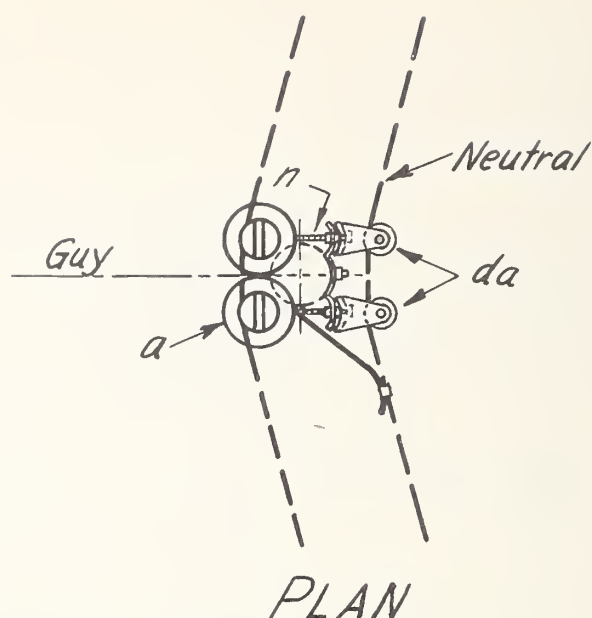
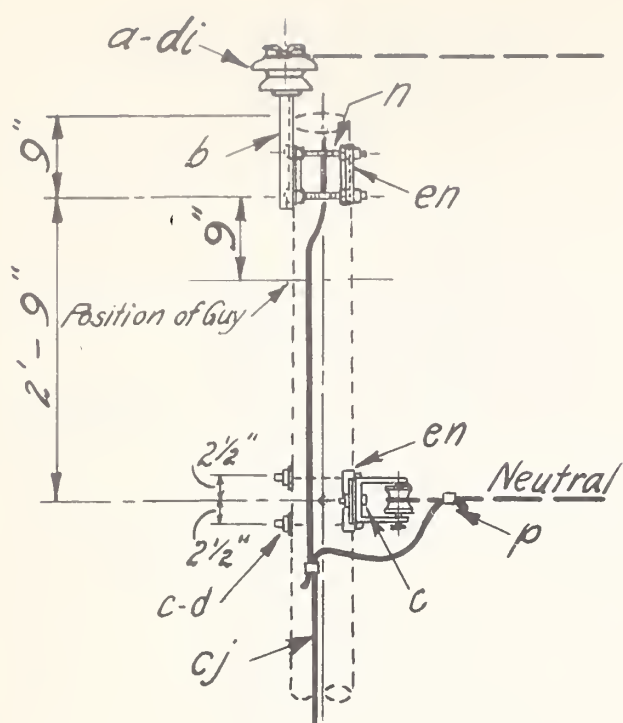
ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
a	2	Insulator, pin type	bs	2	Bolt, single upset, insulated
b	2	Pin, pole top, 15"	en	2	Plate, double support
c	3	Bolt, machine, $\frac{5}{8}$ " x req'd. length			

			V. PRIMARY, 1-PHASE, 2-WIRE, NEUTRAL GROUNDED VERTICAL CONSTRUCTION - 0° TO 5° ANGLE DOUBLE PRIMARY AND NEUTRAL SUPPORTS		
			Scale: $\frac{1}{2}$ " = 1'-0"		Date: Jan. 5, 1949
No.	REVISION	Date	A1-2		



ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
<i>a</i>	2	Insulator, pin type	<i>da</i>	1	Bracket, insulated
<i>b</i>	2	Pin, pole top, 15"			
<i>c</i>	4	Bolt, machine, 5/8" req'd. length			
<i>d</i>	3	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole			

			-----KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED VERTICAL CONSTRUCTION - 5° TO 30° ANGLE	
1 Added pole top pin assemb. sect. 12194			Scale: 1/2"=1'-0"	Date:
No.	REVISION	Date		A2R



# NOTES:

Insulators should be for 23Kv. with 1 $\frac{3}{8}$ " to 1" thimble adapters. This construction is recommended where it is desirable to provide complete pole protection at crossings with the ground wire carried to the top of the pole.

When the transverse load is more than 500 pounds per pin, substitute cross-arm construction similar to C2-1 or C2-2 as required.

Primary and neutral may be installed on the opposite side of the pole as required to avoid conductor crossings.

This construction may also be used for the middle phase on three phase assemblies.

Where crossing span is supported by suspension insulators, add one extra insulator if ground wire extends to top of pole.

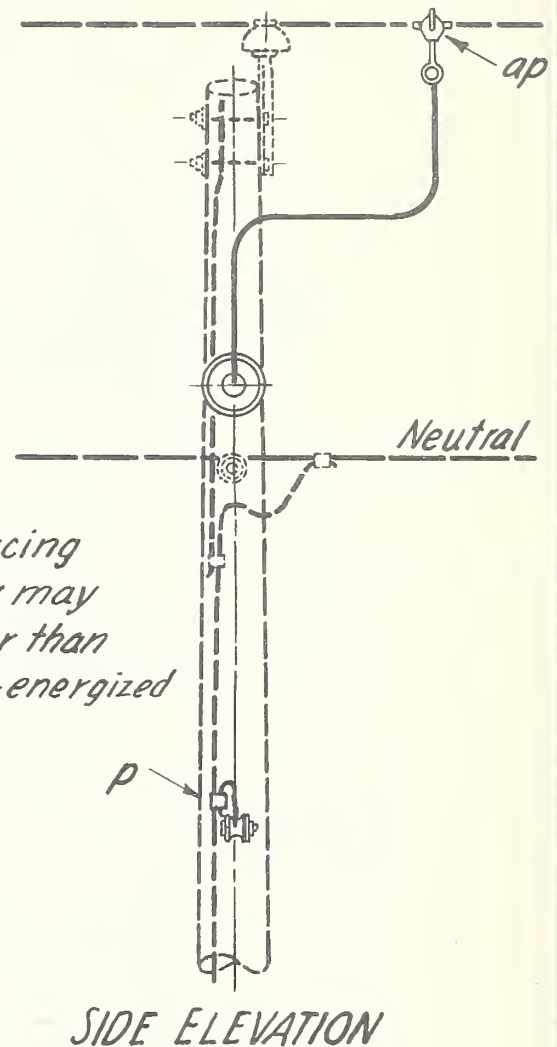
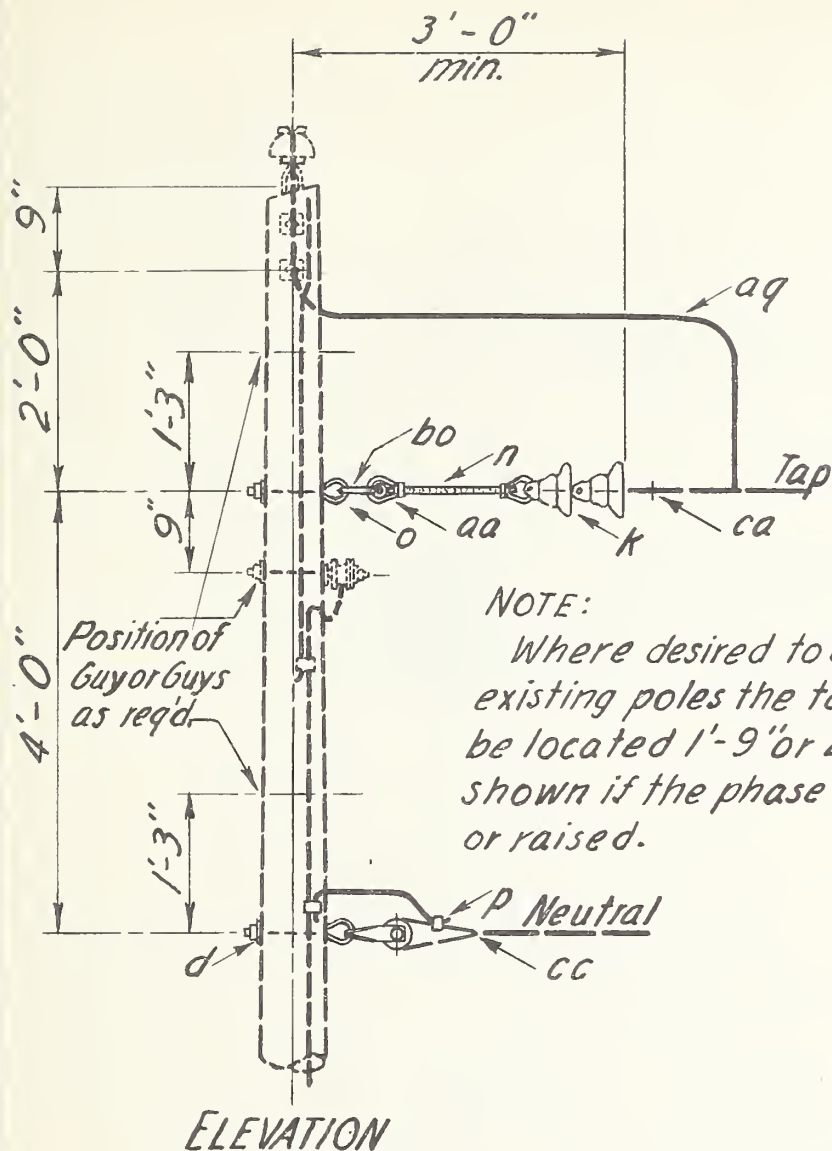
ITEM	No REQ'D	MATERIAL	ITEM	No REQ'D	MATERIAL
a	2	Insulator, pin type	da	2	Bracket, insulated
di	2	Adapter, thimble, 1 $\frac{3}{8}$ " to 1"	en	3	Plate, double support
b	2	Pin, pole top, 15"	p		Connectors, as required
c	6	Bolt, machine, $\frac{5}{8}$ " x req'd. length	cj		Grounding assembly and rod
d	2	Washer, 2 $\frac{1}{4}$ " x 2 $\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{1}{16}$ " hole	n	4	Bolt, double arming, $\frac{5}{8}$ " x req'd. length

----- K V. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
VERTICAL CONSTRUCTION- 0° to 30° ANGLE  
DOUBLE PRIMARY AND NEUTRAL SUPPORTS

Scale:  $\frac{1}{2}$ " = 1'-0"

Date: May 18, 1948

No	REVISION	Date	A2-1
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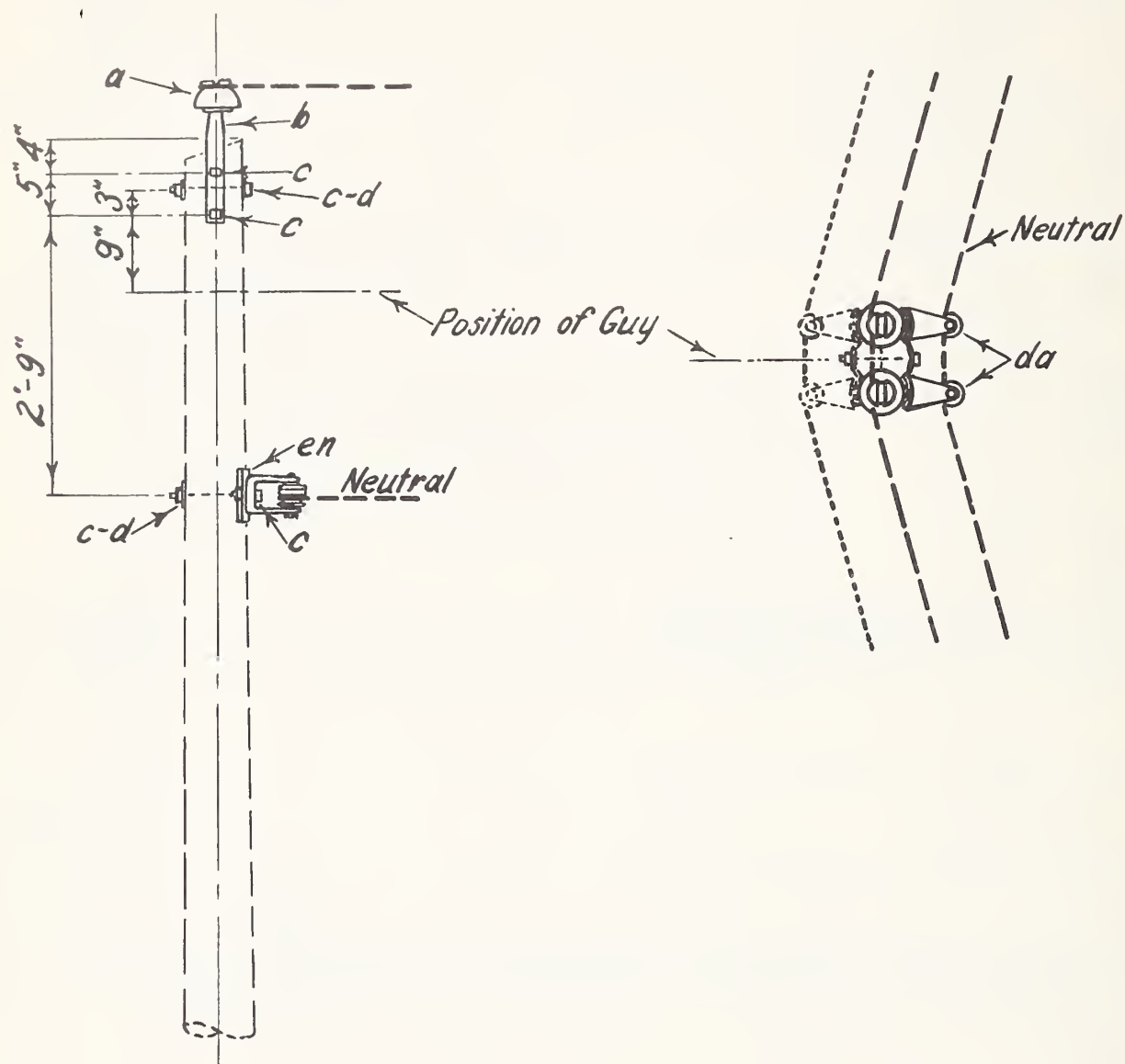


### NOTES:

If an additional tap is required in the opposite direction the material items therefor will be the same, except that two eye nuts are substituted for the two eye bolts.

ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
k	2	Insulator, suspension	aq		Jumpers
n	1	Bolt, double arming, $\frac{5}{8}$ " x req'd. length	d	2	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{1}{16}$ " hole
o	2	Bolt, eye, $\frac{5}{8}$ " x req'd. length	bo	1	Shackle, anchor
P		Connectors, as req'd.	ca	1	Deadend assembly, primary
aa	2	Nut, eye, $\frac{5}{8}$ "	cc	1	Deadend assembly, secondary
ap	1	Clamp, hot line, tap assembly			

			KV. PRIMARY, 1-PHASE 2-WIRE NEUTRAL GROUNDED VERTICAL CONSTRUCTION - TAP AT 0° TO 30° ANGLE		
			Scale: $\frac{1}{2}$ " = 1'-0"		
1	Added ground wire extension	11/5/48	Date: July 15, 1948		
No.	REVISION	DATE:	A2-2R		



ITEM	NO. REQ'D.	MATERIAL	ITEM	NO. REQ'D.	MATERIAL
a	2	Insulator, pin type	d	3	Washer, 2 1/4" x 2 1/4" x 3/16", 7/16" hole
b	2	Pin, pole top, 15"	da	2	Bracket, insulated
c	6	Bolt, machine, 5/8" x req'd. length	en	1	Plate, double support

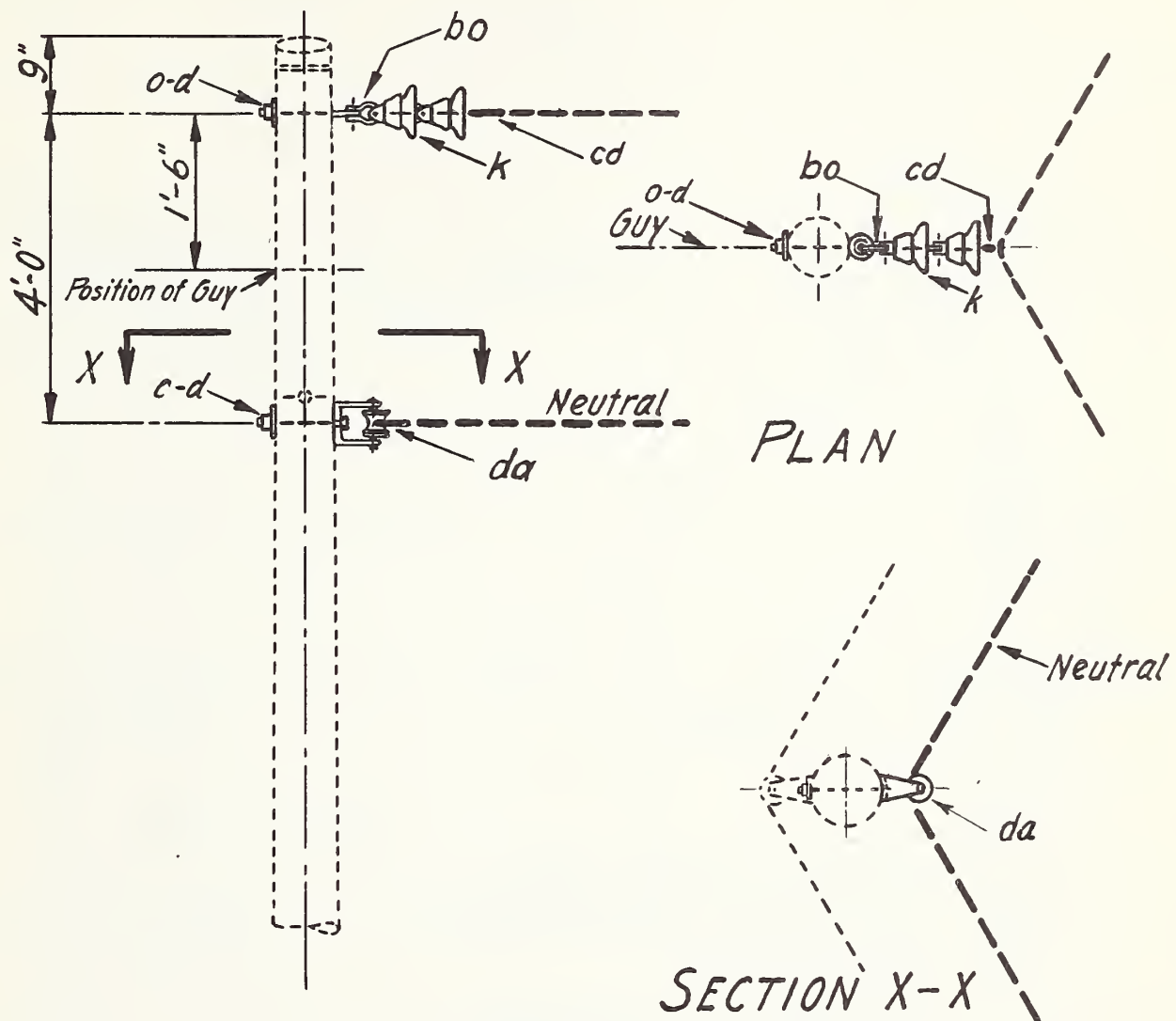
V. PRIMARY, 1-PHASE, 2-WIRE, NEUTRAL GROUNDED  
 VERTICAL CONSTRUCTION-5° TO 30° ANGLE  
 DOUBLE PRIMARY AND NEUTRAL SUPPORTS

Scale: 1/2" = 1'-0"

Date: Feb. 8, '49

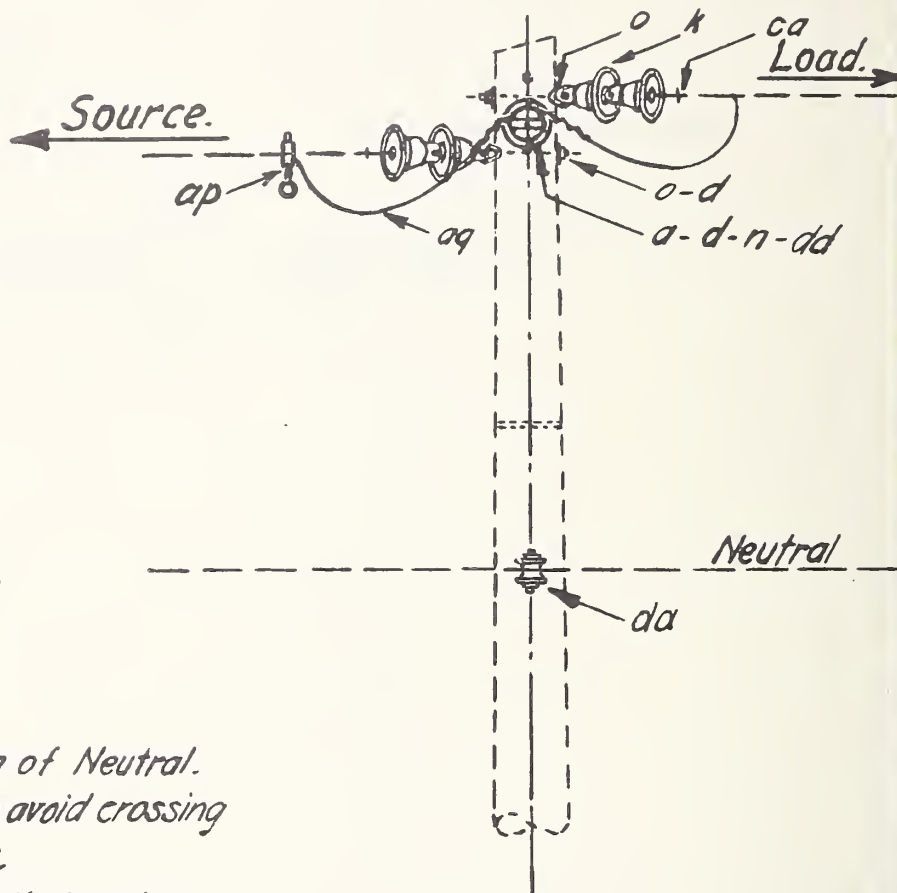
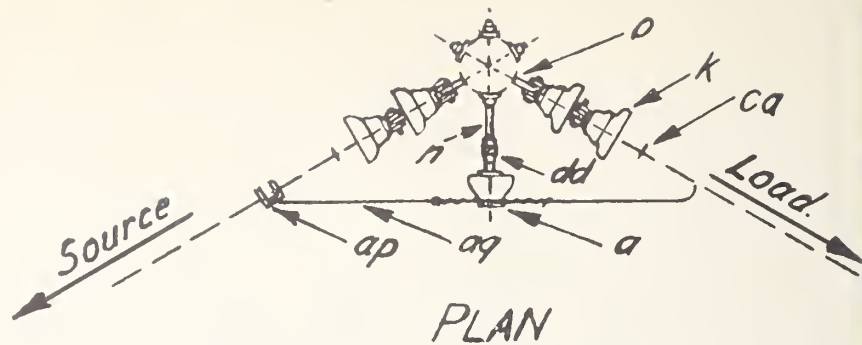
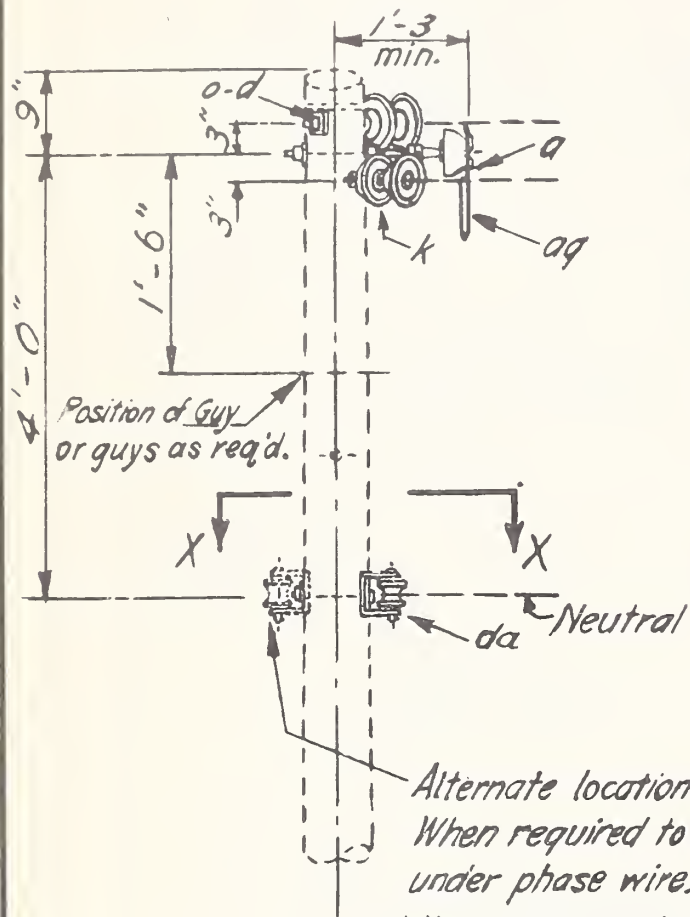
No.	REVISION	DATE

A2-3



ITEM	No. REQ'D.	MATERIAL		ITEM	No. REQ'D.	MATERIAL	
d	2	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		bo	1	Shackle, anchor	
k	2	Insulator, suspension		cd	1	Angle assembly, primary	
o	1	Bolt, eye, 5/8" req'd. length		da	1	Bracket, insulated	
c	1	Bolt, machine, 5/8" x req'd. length	KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED VERTICAL CONSTRUCTION - 30° TO 60° ANGLE				
1	Changed neutral support		6/15/48	Scale: 1/2" = 1'-0"		Date:	
No.	REVISION		DATE:			A3R	

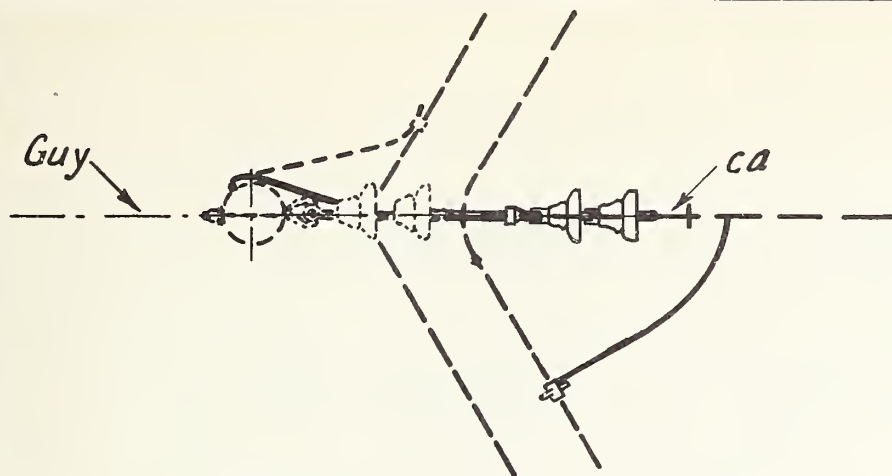
SECTION X-X



ITEM	No REQD	MATERIAL	ITEM	No REQD	MATERIAL
a	1	Insulator, pin type	da	1	Bracket, insulated
c	1	Bolt, machine, 5/8" x req'd length	aq		Jumper
d	5	Washer, 2 1/4" x 2 1/4" x 3/16", 1 3/16" hole	ca	2	Dead end assembly, primary
k	4	Insulator, suspension	dd	1	Adapter, insulator
n	1	Bolt, double arming	ap	1	Clamp, hot line, tap assembly
o	2	Bolt, eye, 5/8" x req'd length	p		Connectors, as req'd.

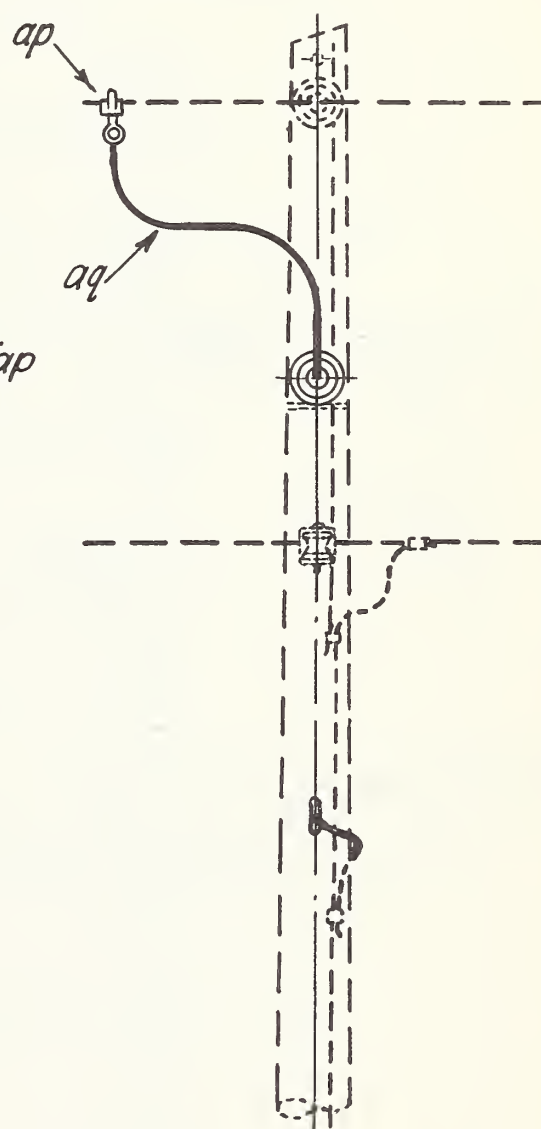
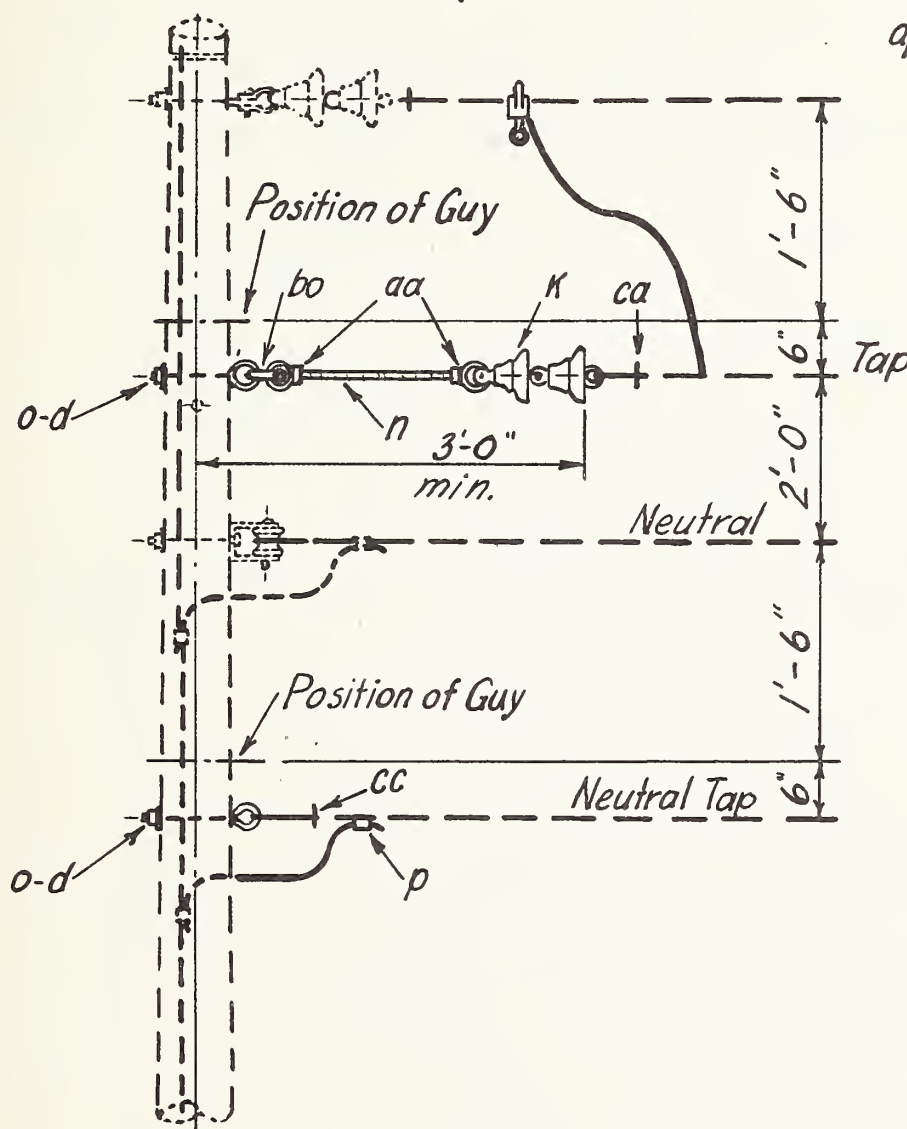
----- K V. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
VERTICAL CONSTRUCTION - 30° TO 60° ANGLE

1	Added note	11/10/48	Scale: 1/2" = 1'-0"	Date:
No.	REVISION	DATE:		A3-1.R



NOTE:

A similar arrangement may be used for taps at 60° to 90°



ITEM	N <sup>o</sup> REQ'D	MATERIAL	ITEM	N <sup>o</sup> REQ'D	MATERIAL
d	2	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	aq		Jumpers
K	2	Insulator, suspension	bo	1	Shackle, anchor
n	1	Bolt, double arming, 5/8" x req'd length	ca	1	Deadend assembly, primary
o	2	Bolt, eye, 5/8" x req'd. length	cc	1	Deadend assembly, neutral
p		Connectors, as req'd.			
aa	2	Nut, eye, 5/8"			
ap	1	Clamp, hot line, tap assembly			

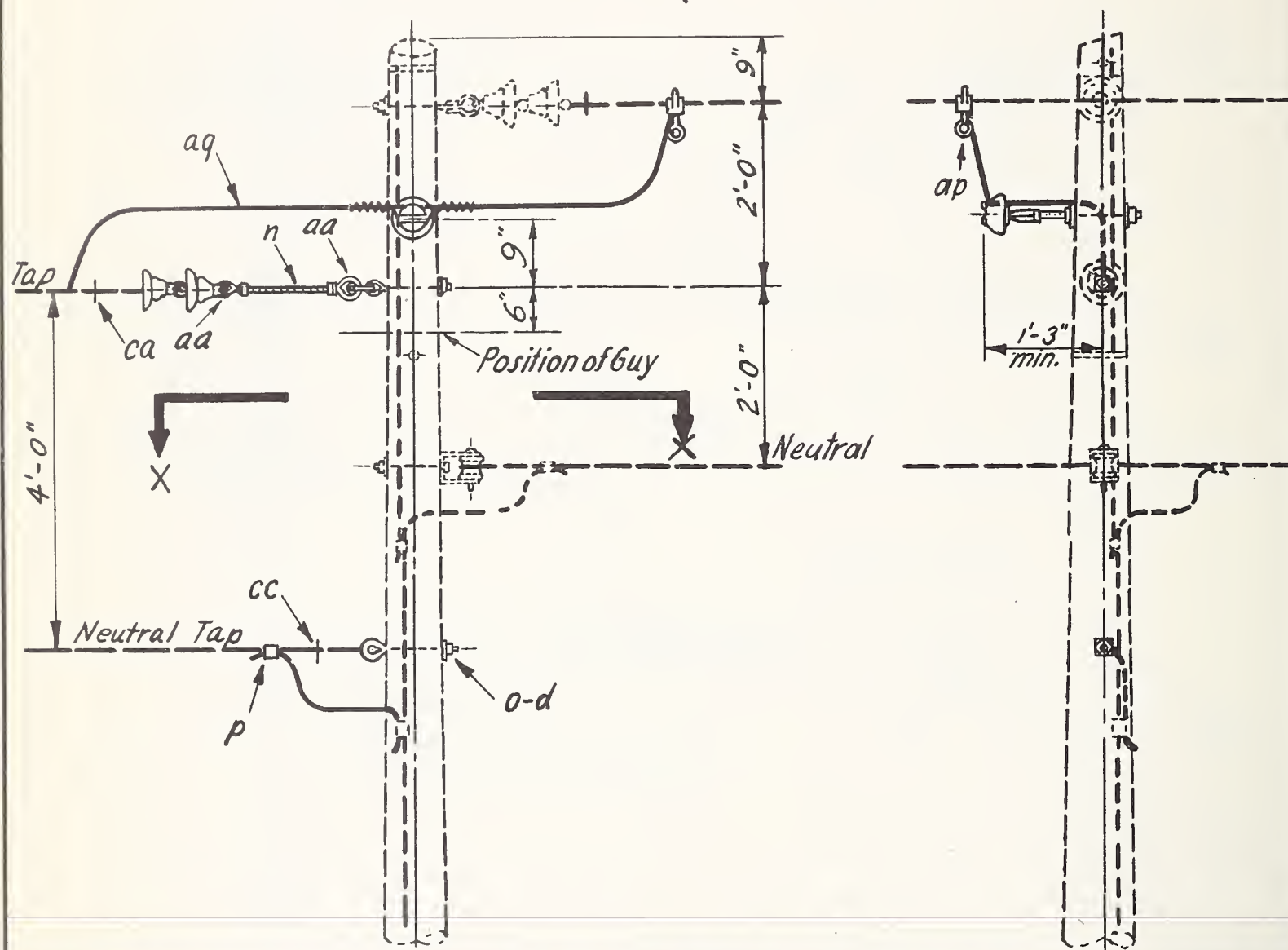
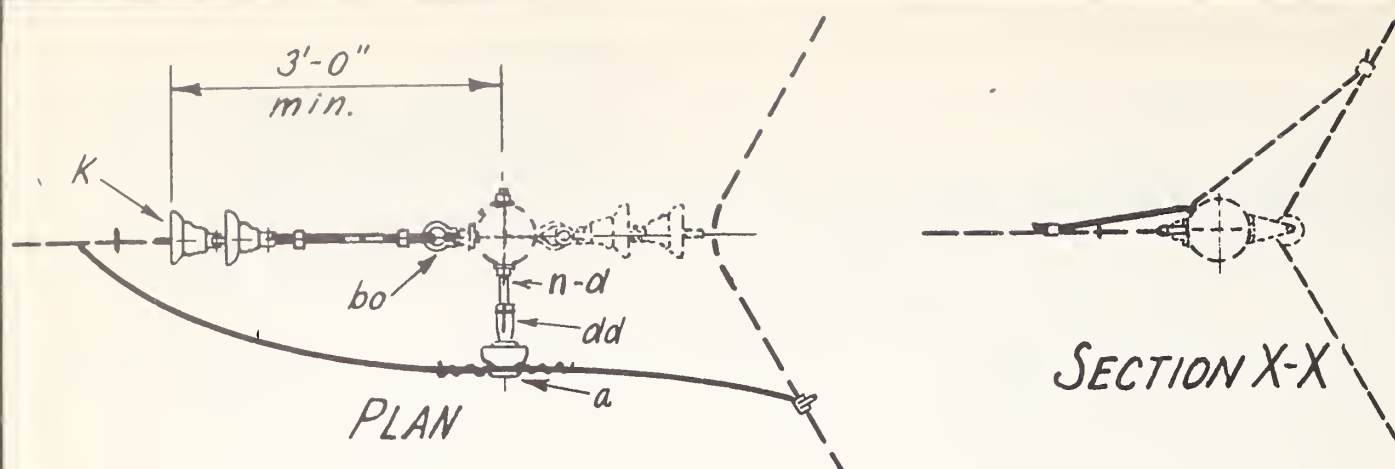
KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUND  
VERTICAL CONSTRUCTION - TAP AT 30° TO 60° ANGLE  
(INSIDE OF ANGLE)

Scale: 1/2" = 1'-0"

Date: June 23, 1948

No. REVISION DATE

A 3-3



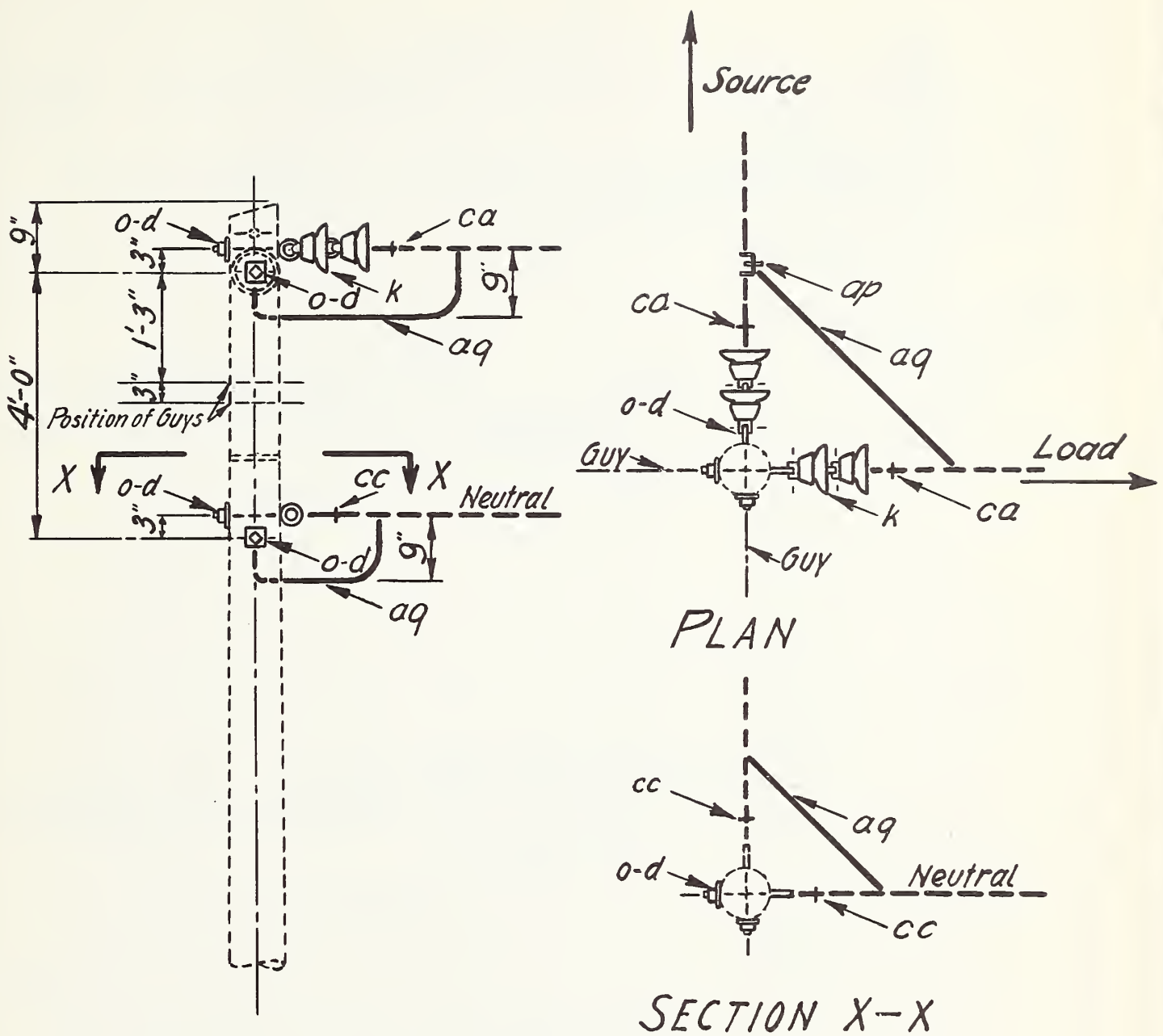
ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
a	1	Insulator, pin type	ap	1	Clamp, hot line, tap assembly
d	4	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	aq		Jumpers
k	2	Insulator, suspension	bo	1	Shackle, anchor
n	2	Bolt, double arming, 5/8" x req'd length	ca	1	Deadend assembly, primary
o	2	Bolt, eye, 5/8" x req'd length	cc	1	Deadend assembly, neutral
p		Connectors, as req'd.	dd	1	Adapter, insulator
aa	2	Nut, eye, 5/8"			

KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
VERTICAL CONSTRUCTION-TAP AT 30° TO 60° ANGLE  
(OUTSIDE OF ANGLE)

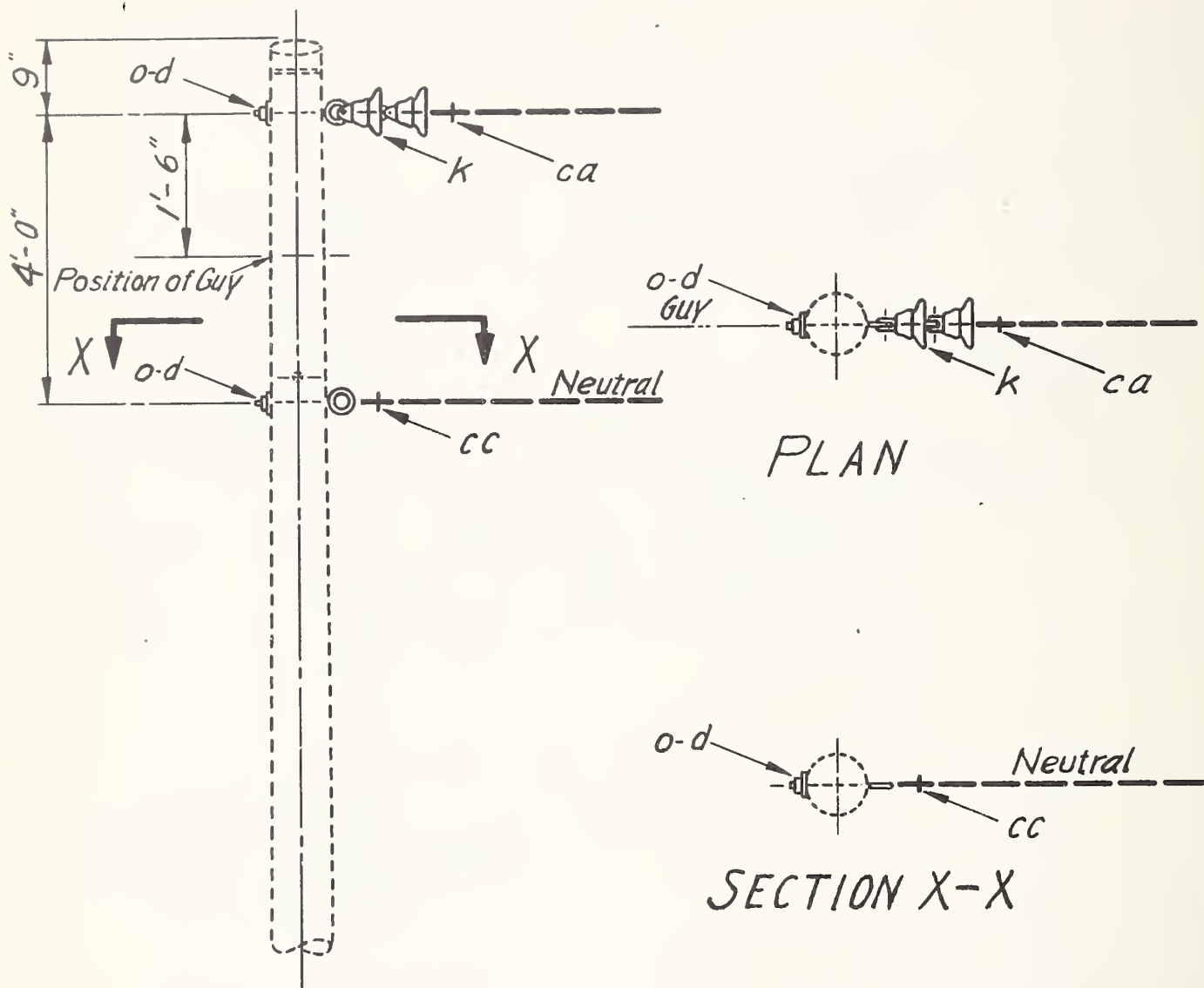
Scale: 1/2" = 1'-0"

Date: June 23, 1948

No.	REVISION	DATE	A3-4
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ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
d	4	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	o	4	Bolt, eye, 5/8" req'd. length
k	4	Insulator, suspension	cc	2	Deadend assembly, neutral
ca	2	Deadend assembly, primary	aq		Jumpers
p		Connectors, as req'd.	----- KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED VERTICAL CONSTRUCTION - 60° TO 90° ANGLE Scale: 1/2" = 1'-0"		
ap	1	Clamp, hot line, tap assembly			
			Date:		
			A4		
NO.	REVISION		DATE:		



ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
d	2	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	cc	1	Deadend assembly, neutral
k	2	Insulator, suspension			
o	2	Bolt, eye, 5/8" x req'd. length			
ca	1	Deadend assembly, primary			

-----KV PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
VERTICAL CONSTRUCTION - DEAD END (SINGLE)

Scale: 1/2" = 1'-0"

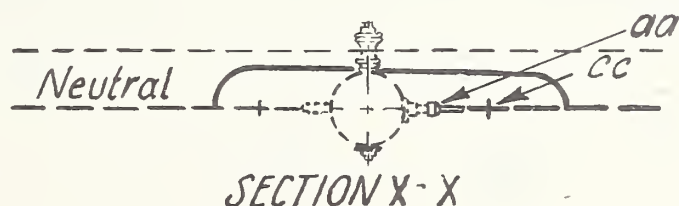
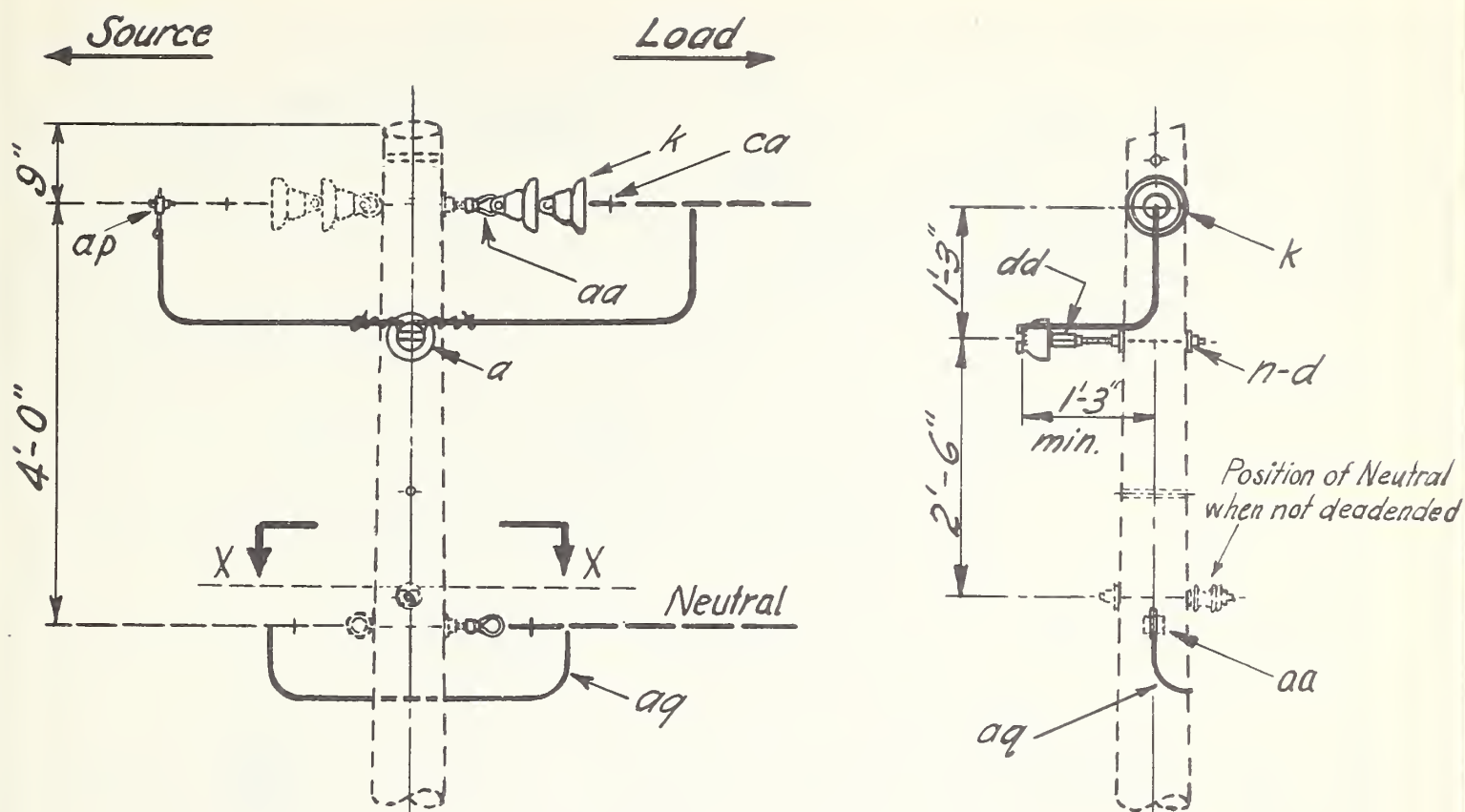
Date:

NO.

REVISION

DATE:

A5



**NOTE:**

When the line may be energized from either end, hot line clamps should be installed on both ends of the jumper.

ITEM	No. REQD.	MATERIAL	ITEM	No. REQD.	MATERIAL
a	1	Insulator, pin type	aa	2	Nut, eye, $\frac{3}{8}$ "
d	2	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{3}{16}$ " hole	aq	2	Jumpers
k	2	Insulator, suspension	ca	1	Deadend assembly, primary
n	1	Bolt, double arming, $\frac{3}{8}$ " x reqd. lgth.	cc	1	Deadend assembly, neutral
p		Connectors, as reqd.	dd	1	Adapter, insulator
ap	1	Clamp, hot line, tap assembly			

KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
VERTICAL CONSTRUCTION-SINGLE PHASE TAP AT DEADEND

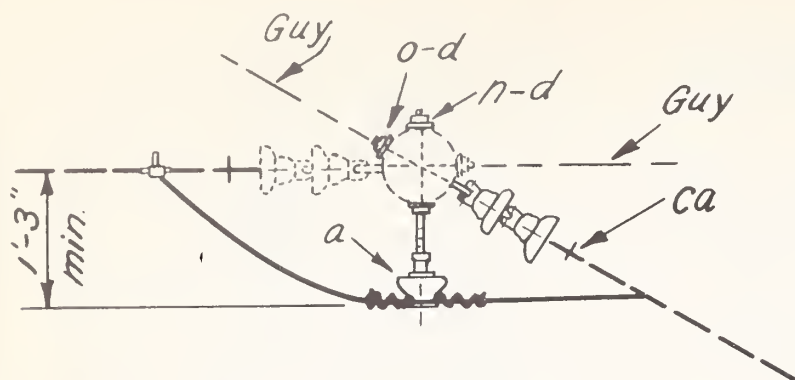
Scale:  $\frac{1}{2}$ " = 1'-0"

Date:

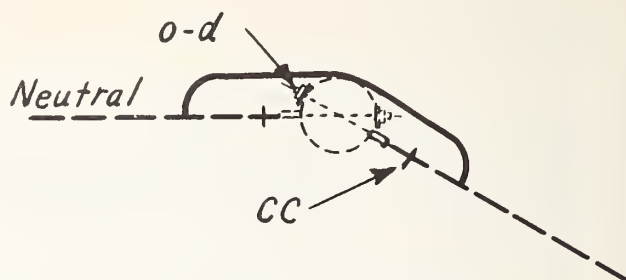
1 Add thru neut. postn; chge neut. jump 7-5-48

No. REVISION DATE

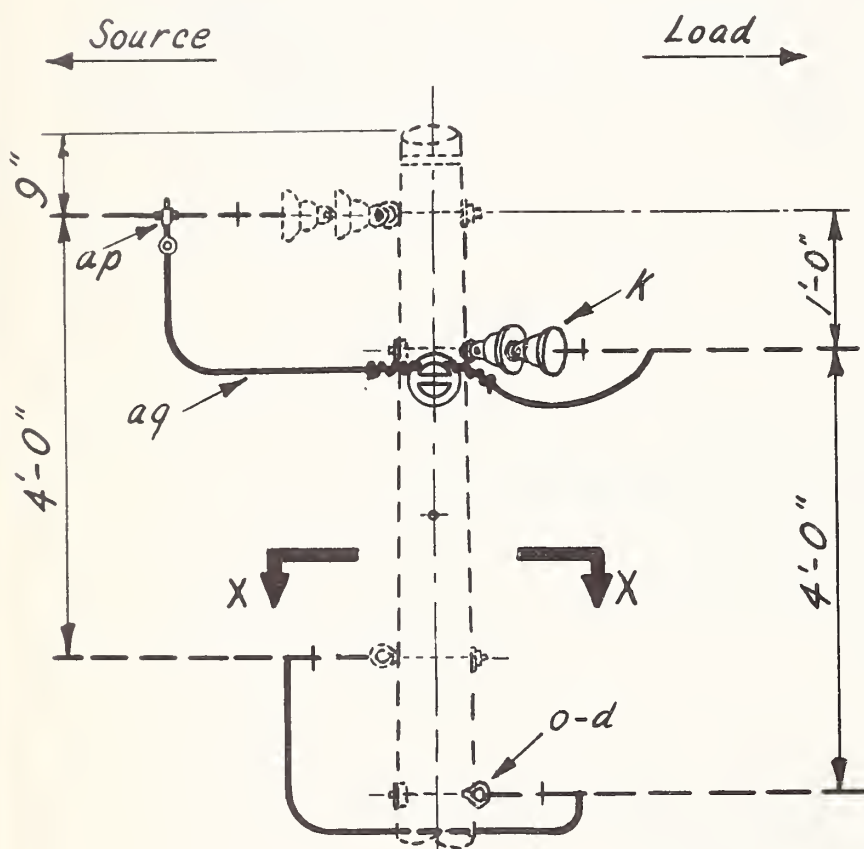
A5-4R



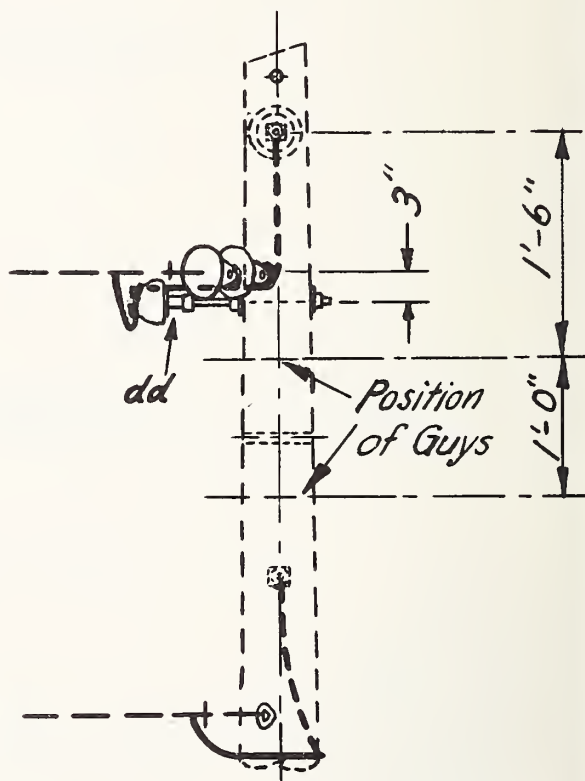
PLAN



SECTION X-X



ELEVATION



SIDE ELEVATION

ITEM	N <sup>o</sup> REQ'D.	MATERIAL	ITEM	N <sup>o</sup> REQ'D.	MATERIAL
a	1	Insulator, pin type	ap	1	Clamp, hot line, tap assembly
d	4	Washer, 2 1/4" x 2 1/4" x 3/16", 1 3/16" hole	aq		Jumpers
K	2	Insulator, suspension	ca	1	Deadend assembly, primary
n	1	Bolt, doublearming, 3/8" x req'd. length	cc	1	Deadend assembly, neutral
p		Connectors, as req'd.	dd	1	Adapter, insulator
o	2	Bolt, eye, 3/8" x req'd. length			

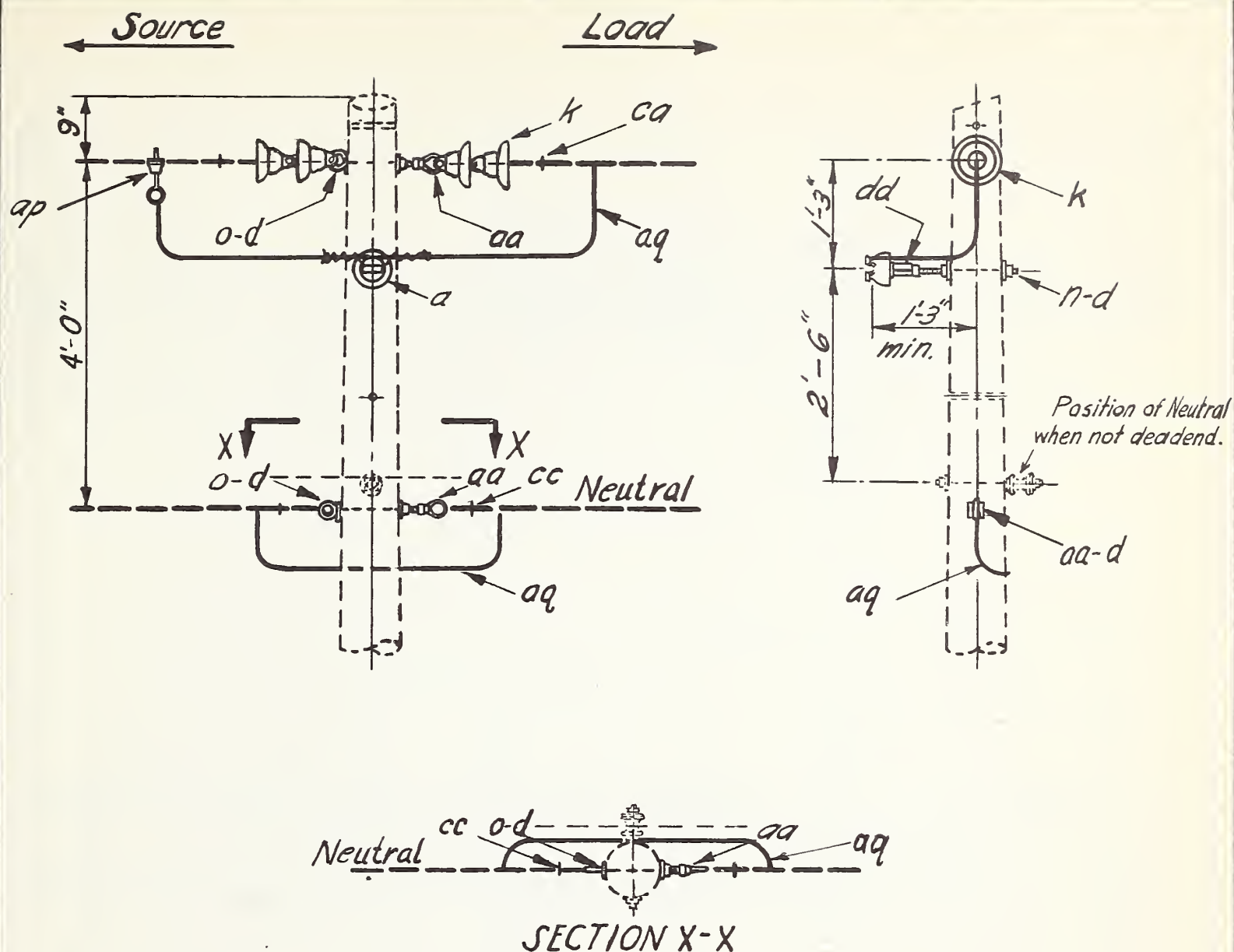
IV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
VERTICAL CONSTRUCTION-5° TO 60° TAP AT DEADEND

Scale: 1/2" = 1'-0"

Date: July 9, 1948

NO. REVISION DATE

A5-7



**NOTE:**

When the line may be energized from either end, hot line clamps should be installed on both ends of the jumper.

ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
a	1	Insulator, pin type	aa	2	Nut, eye, $\frac{5}{8}$ "
d	6	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole	oa	2	Jumpers
k	4	Insulator, suspension	ca	2	Deadend assembly, primary
n	1	Bolt, double arming, $\frac{7}{8}$ " x req'd. lgth.	cc	2	Deadend assembly, neutral
o	2	Bolt, eye, $\frac{5}{8}$ " x req'd. length	dd	1	Adapter, insulator
p		Connectors, as req'd.	ap	1	Clamp, hot line, tap assembly

KV. PRIMARY 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
VERTICAL CONSTRUCTION-DEADEND (DOUBLE)

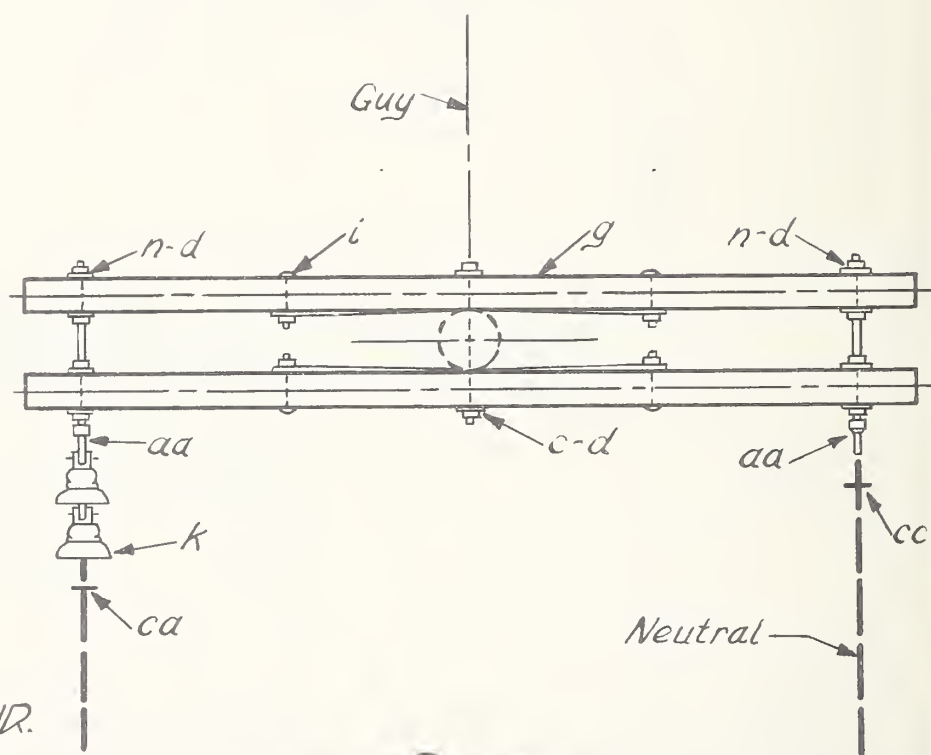
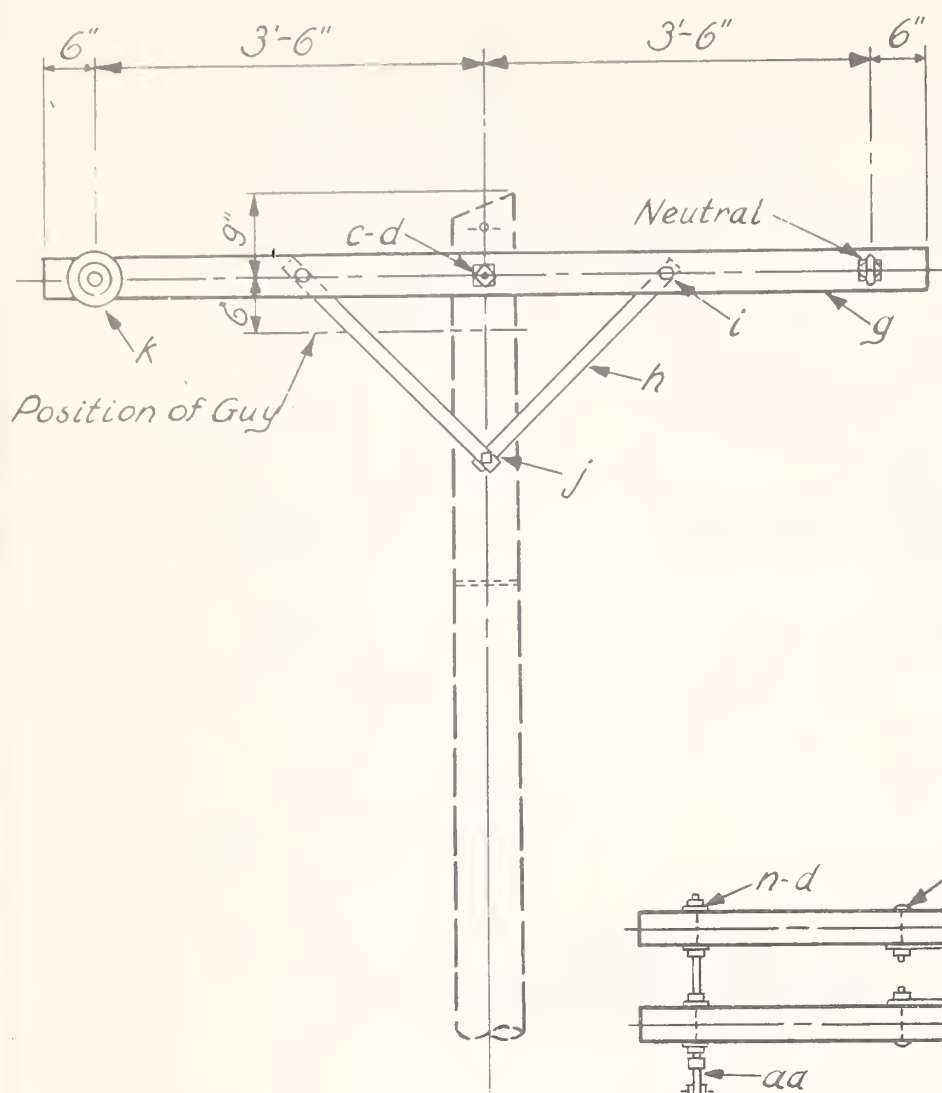
Scale:  $\frac{1}{2}$ " = 1'-0"

Date:

1 Add thru neut. p's'n; ch'ge neut. jum. 7-5-48

NO REVISION DATE

A6 R



Note:

When crossarm guys are required, refer to drawing E5-1R.

PLAN

ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
C	1	Bolt, machine, $\frac{5}{8}$ " x req'd. length	k	2	Insulator, suspension
d	10	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{1}{16}$ " hole	n	2	Bolt, double arming $\frac{5}{8}$ " x req'd. length
g	2	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 8'-0"	aa	2	Nut, eye, $\frac{5}{8}$ "
h	4	Brace, flat, $1\frac{1}{4}$ " x $\frac{1}{4}$ " x 28"	ca	1	Deadend assembly, primary
i	4	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "	cc	1	Deadend assembly, neutral
j	2	Screw, lag, $\frac{1}{2}$ " x 4"			

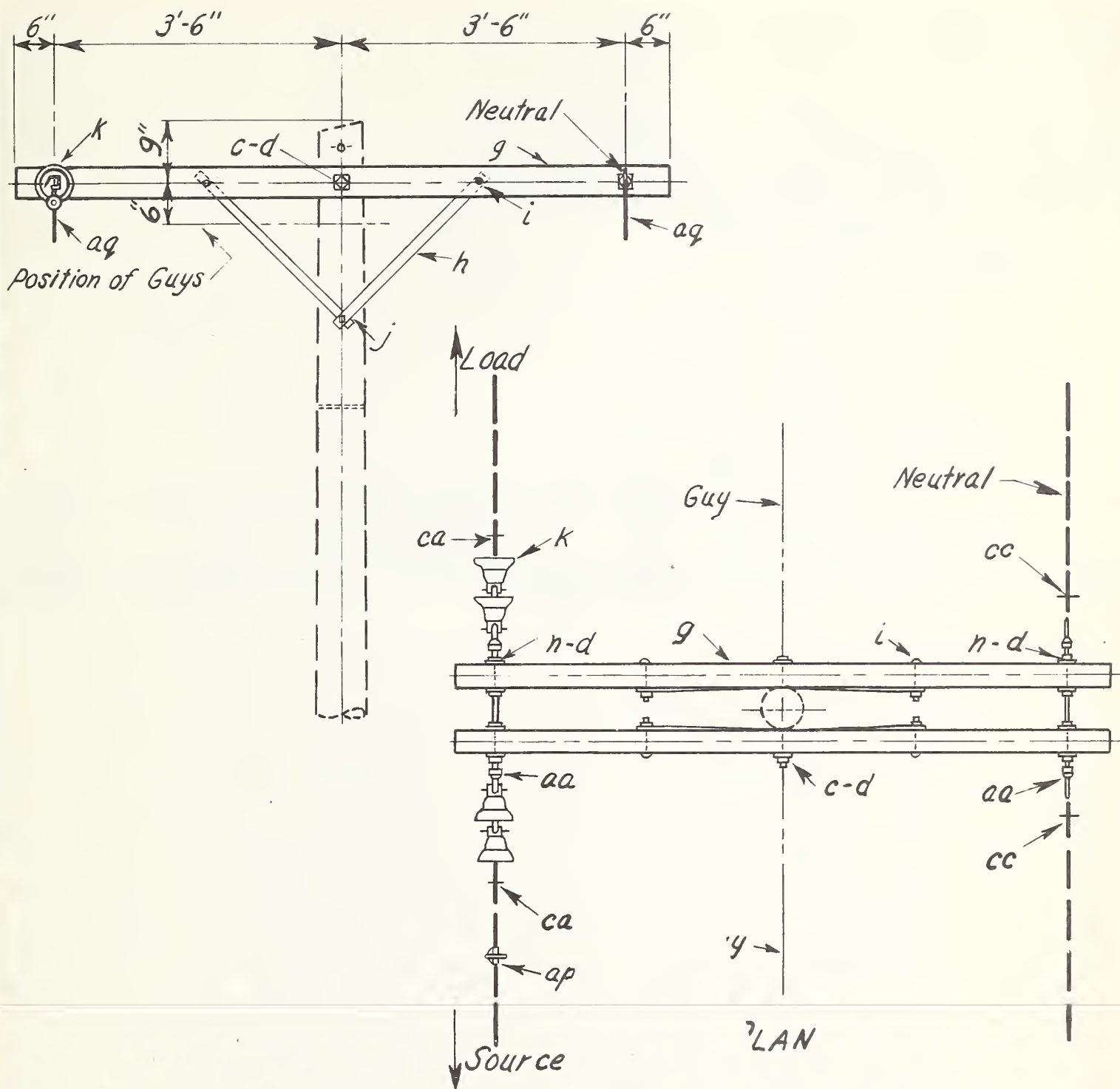
----- V. PRIMARY, 1-PHASE, 2-WIRE, NEUTRAL GROUNDED  
CROSSARM CONSTR. - DEADEND (SINGLE)

Scale:  $\frac{1}{2}$ " = 1'-0"

Date: Apr. 13, '49

No. REVISION DATE

A7R



ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
c	1	Bolt, machine, $\frac{5}{8}$ " x req'd. length	n	2	Bolt, double arming, $\frac{5}{8}$ " x req'd. lgth.
d	10	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole	p		Connectors, as req'd.
g	2	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 8'-0"	aa	4	Nut, eye, $\frac{5}{8}$ "
h	4	Brace, flat, $1\frac{1}{4}$ " x $\frac{1}{4}$ " x 28"	ap	1	Clamp, hot line
i	4	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "	aq		Jumpers
j	2	Screw, lag, $\frac{1}{2}$ " x 4"	ca	2	Deadend assembly, primary
k	4	Insulator, suspension	cc	2	Deadend assembly, neutral

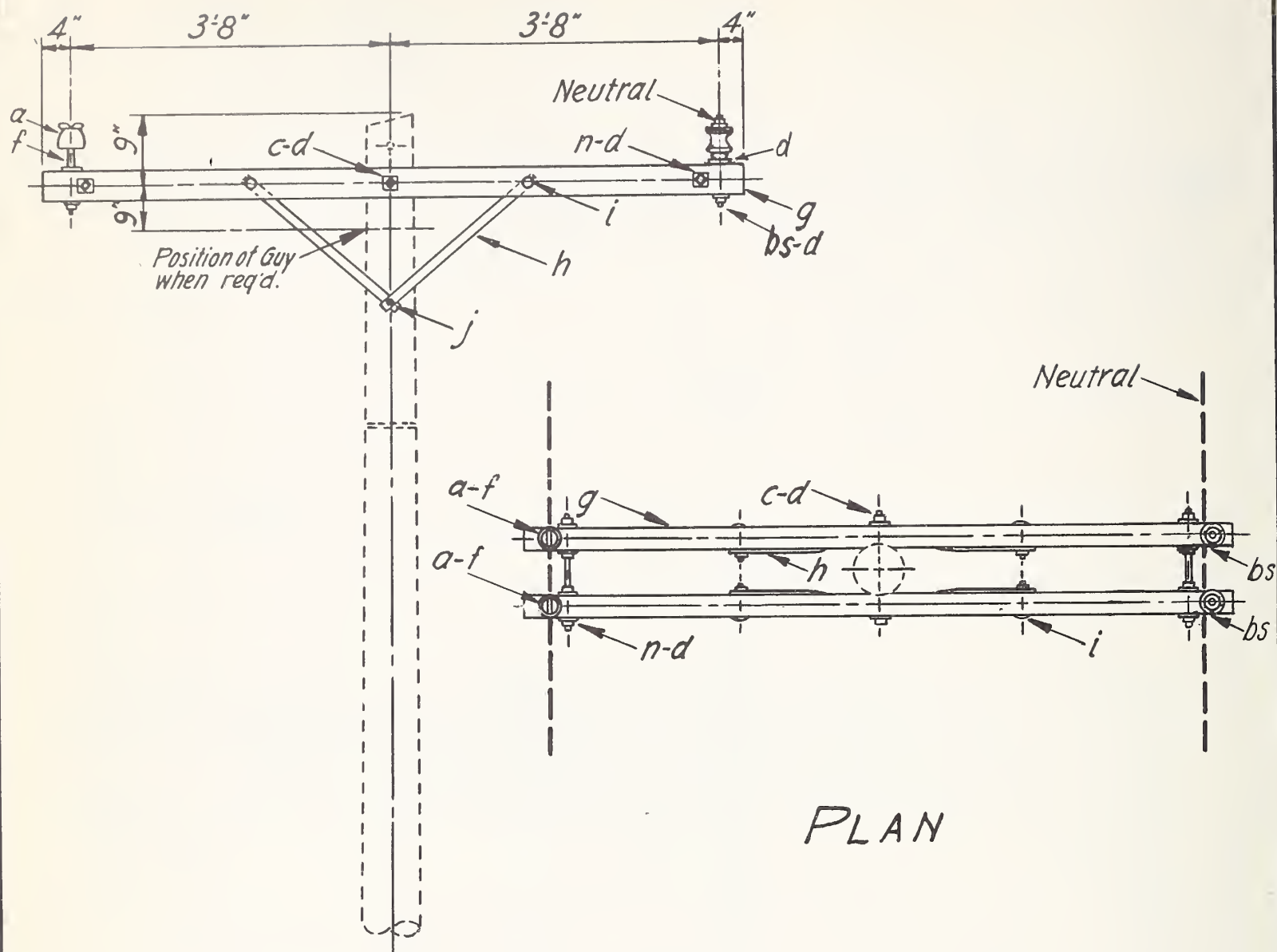
V. PRIMARY, 1-PHASE, 2-WIRE, NEUTRAL GROUNDED  
CROSSARM CONSTRUCTION - DEADEND (DOUBLE)

Scale:  $\frac{1}{2}$ " = 1'-0"

Date: Apr. 15, '49

No. REVISION DATE

A 8 R

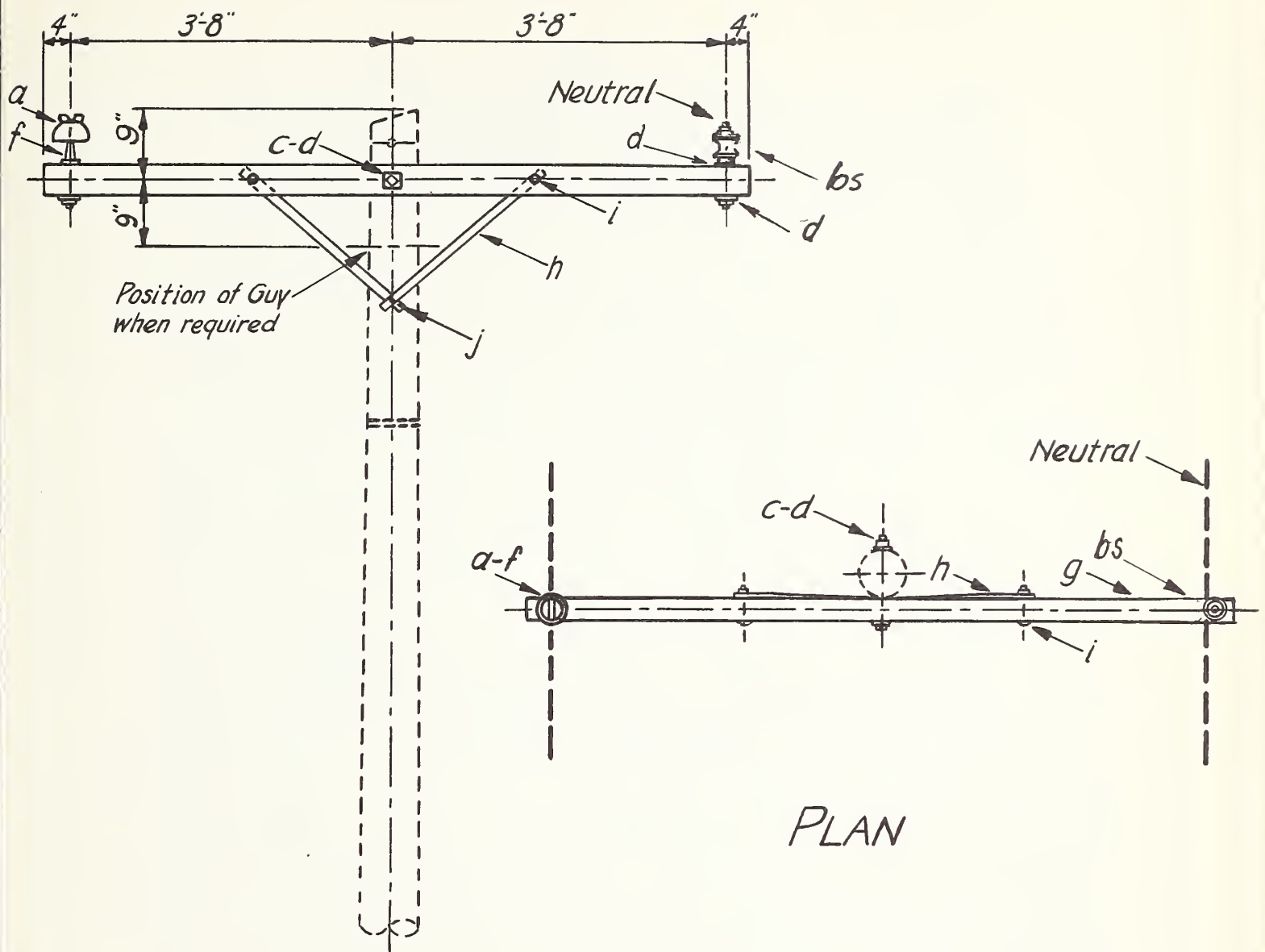


PLAN

ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
a	2	Insulator, pin type	h	4	Brace, 1/4" x 1/4" x 28"
c	1	Bolt, machine, 5/8" x req'd. length	i	4	Bolt, carriage, 3/8" x 4 1/2"
d	14	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	j	2	Screw, lag, 1/2" x 4"
f	2	Pin, crossarm, steel, 5/8" x 10 3/4"	n	2	Bolt, double arming, 5/8" x req'd. length
g	2	Crossarm, 3 1/2" x 4 1/2" x 8'-0"	bs	2	Bolt, single upset, insulated

.....KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
CROSSARM CONSTRUCTION - DOUBLE LINE ARM

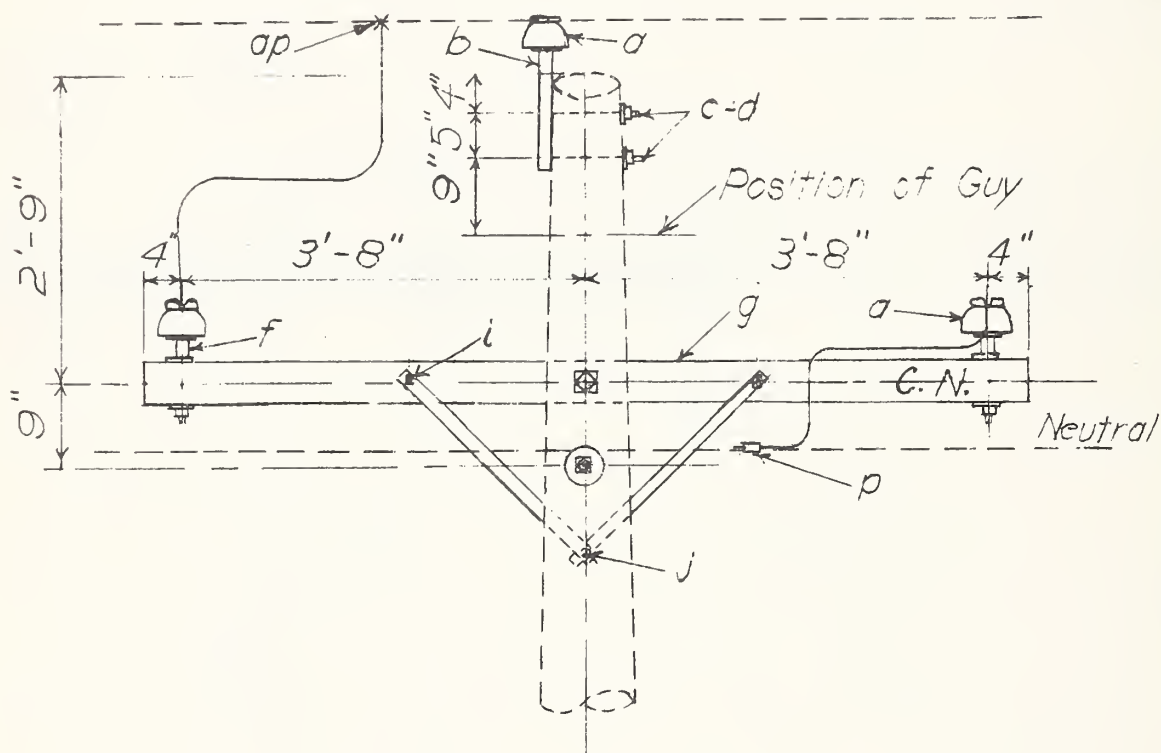
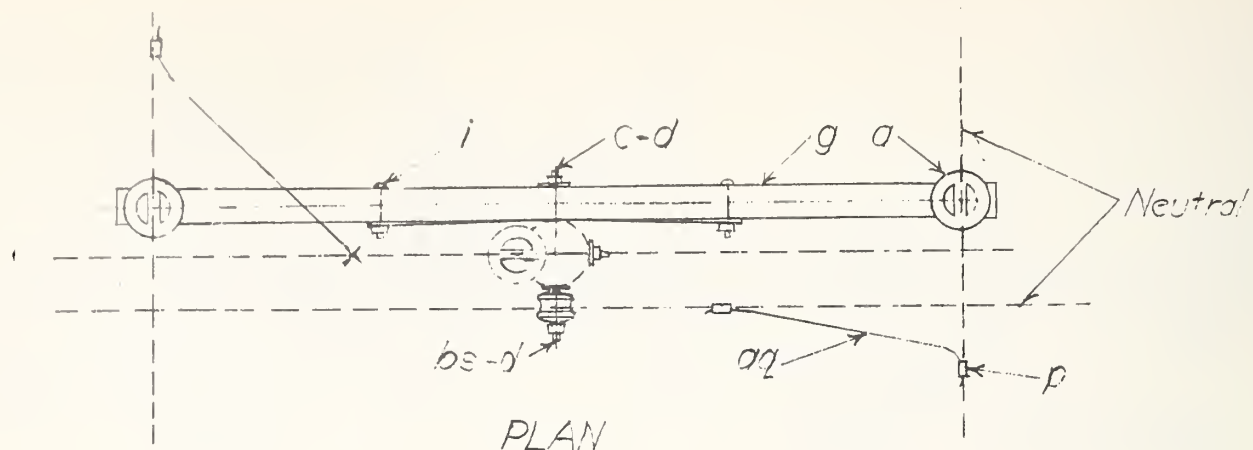
1.	Changed neutral support	7/9/48	Scale: 1/2" = 1'-0"	Date:
No.	REVISION	Date:		A9R



ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
a	1	Insulator, pin type	h	2	Brace, 1/4" x 1/4" x 28"
c	1	Bolt, machine, 5/8" x req'd. length	i	2	Bolt, carriage, 3/8" x 4 1/2"
d	4	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	j	1	Screw, lag, 1/2" x 4"
f	1	Pin, crossarm, steel, 5/8" x 10 3/4"	bs	1	Bolt, single upset, insulated
g	1	Crossarm, 3 1/2" x 4 1/2" x 8'-0"			

.....KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
CROSSARM CONSTRUCTION - SINGLE LINE ARM

1	Changed neutral support	7/9/48	Scale: 1/2" = 1'-0"	Date:
No.	REVISION	Date:		A9-1R



ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
a	3	Insulator, pin type	l	2	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "
b	1	Pin, pole top, 15"	j	1	Screw, lag, $\frac{1}{2}$ " x 4"
c	3	Bolt, machine, $\frac{5}{8}$ " x req'd. length	p		Connectors as req'd
d	5	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole	ap	1	Clamp, hot line tap assembly
f	2	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "	aq		Jumpers and leads as req'd
g	1	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 8'-0"	bs	1	Bolt, single upset, insulated
h	2	Brace, $1\frac{1}{4}$ " x $\frac{1}{4}$ " x 28"	N	2	Letters "C.N. with nails

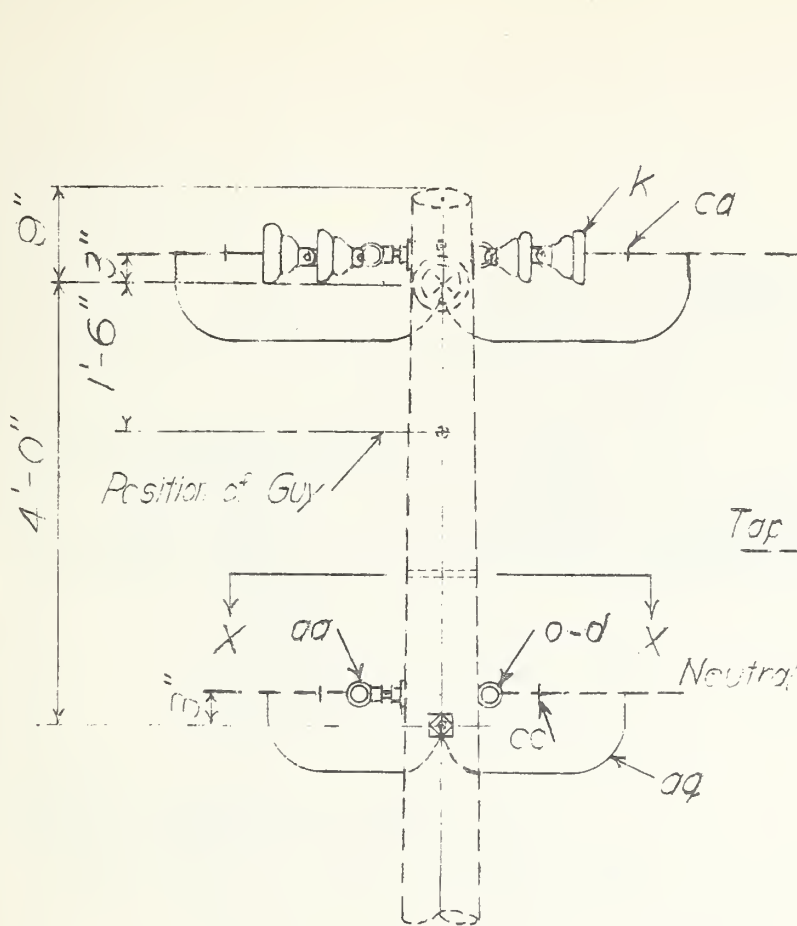
7.2/12.5 KV. PRIMARY 1-PHASE 2-WIRE NEUTRAL GROUNDED  
CROSSARM CONSTR.-SINGLE-PHASE JUNCTION WITH SINGLE-PHASE LINE

Scale:  $\frac{1}{2}$ " = 1'-0"

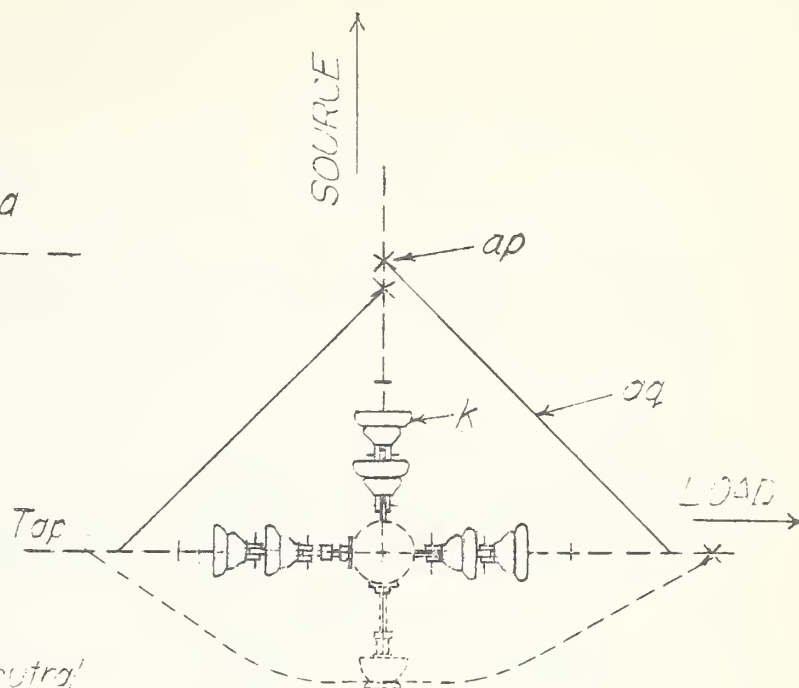
Date: July 26, 50

No. REVISION DATE

A22R



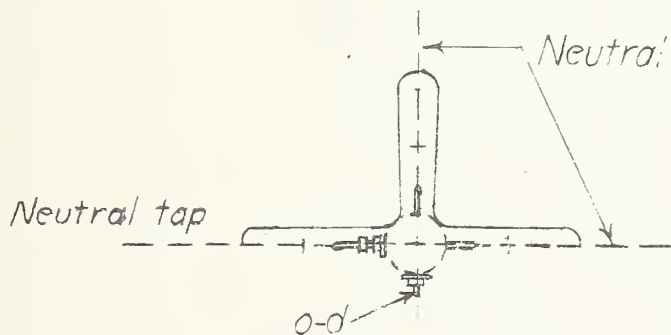
ELEVATION



PLAN

Note:

Tap connection should be as shown dotted when the source is from the other direction. When this arrangement is used the material list should be increased as required and the unit designated as A 30A.



SECTION X-X

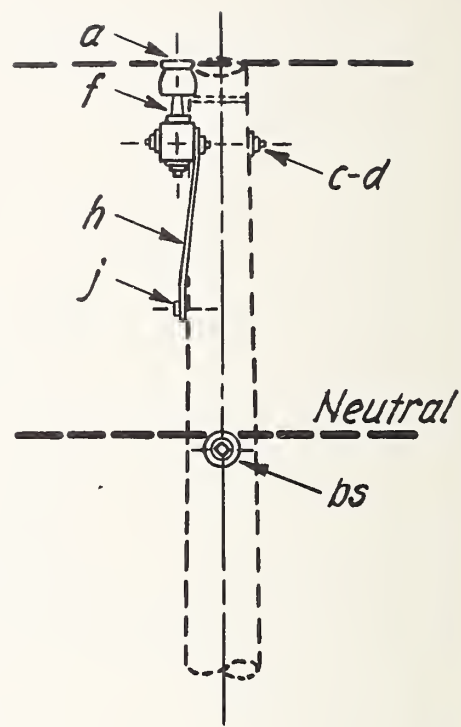
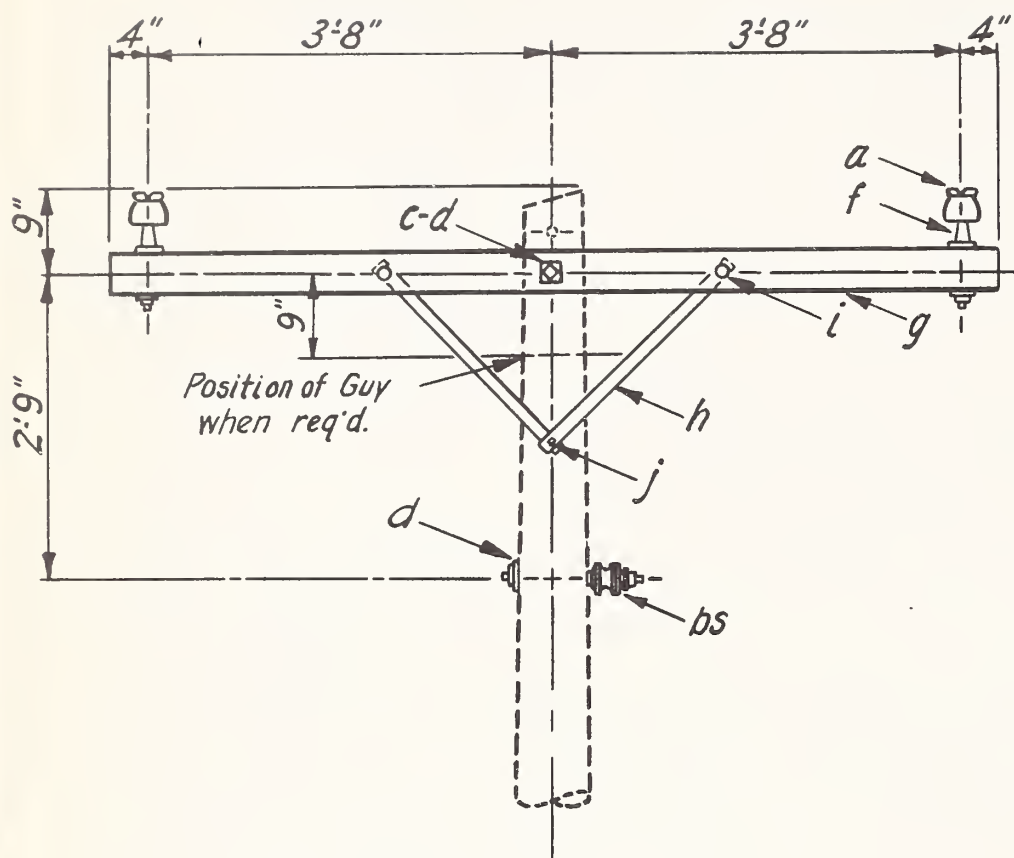
ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
d	6	Washer, $2\frac{1}{4} \times 2\frac{1}{4} \times \frac{3}{16}$ , $\frac{13}{16}$ hole	ap	2	Clamp, hot line tap assembly
k	6	Insulator, suspension	aq		Jumpers and leads as req'd
o	4	Bolt, eye, $\frac{5}{8}$ " x req'd length	ca	3	Deadend assembly, primary
p		Connectors, as req'd	cc	3	Deadend assembly, neutral
aa	2	Nut, eye			

7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE NEUTRAL GROUNDED  
VERTICAL CONSTR. - SINGLE-PHASE TAP AT 60° TO 90° ANGLE

Scale:  $\frac{1}{2}$ " = 1'-0"

Date: July 27, 50

No.	REVISION	DATE	A 30
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ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
a	2	Insulator, pin type	g	1	Crossarm, 3 1/2" x 4 1/2" x 8'-0"
c	1	Bolt, machine, 5/8" req'd. length	h	2	Brace, 1 1/4" x 1/4" x 28"
d	3	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	i	2	Bolt, carriage, 3/8" x 4 1/2"
bs	1	Bolt, single upset, insulated	j	1	Screw, lag, 1/2" x 4"
f	2	Pin, crossarm, steel, 5/8" x 10 3/4"			

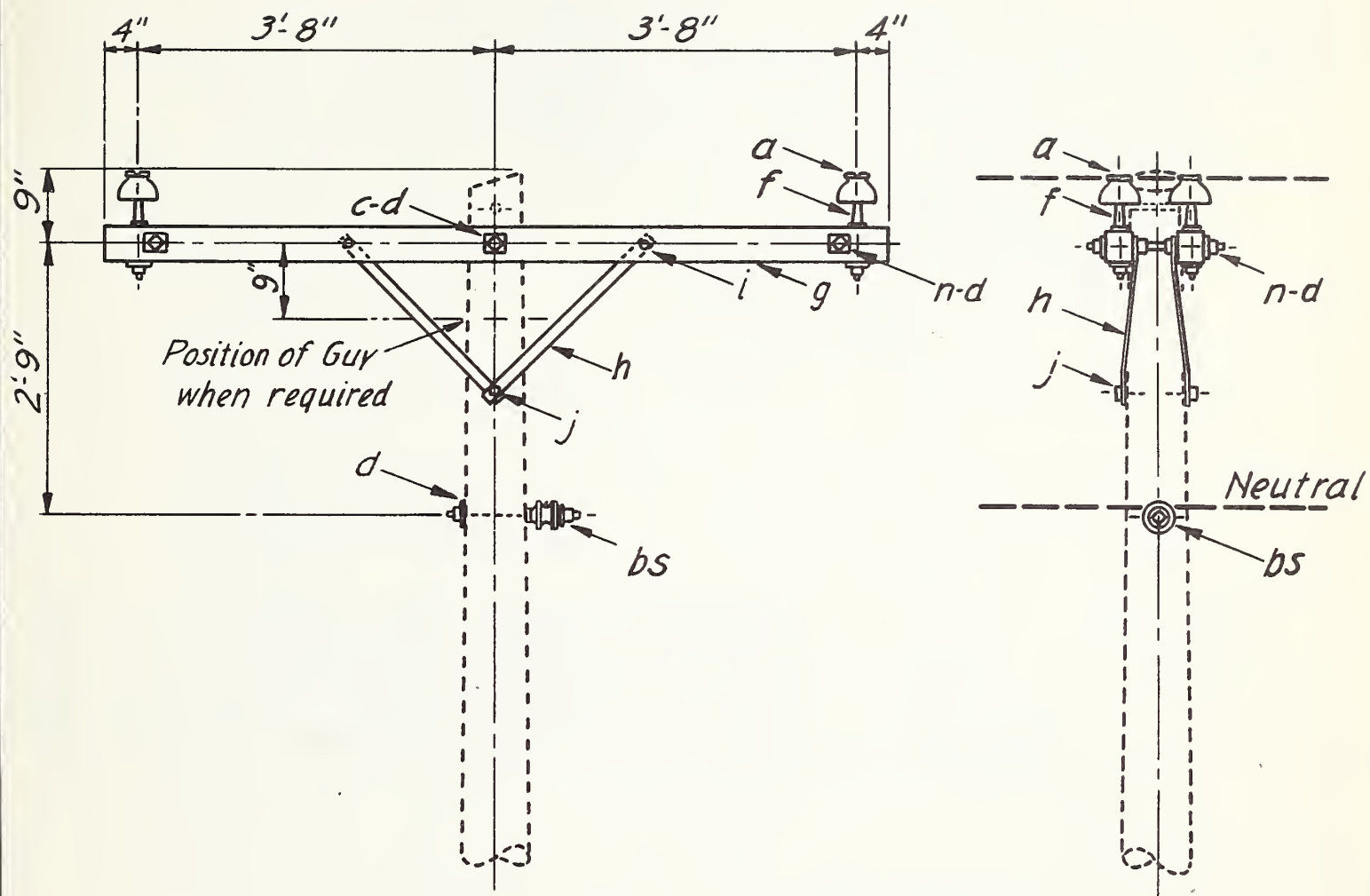
\_\_\_\_\_ KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL  
CROSSARM CONSTR. - 0° TO 5° ANGLE, SINGLE PRIMARY SUPPORT

Scale: 1/2" = 1'-0"

Date:

No. REVISION DATE:

BI



ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
a	4	Insulator, pin type	h	4	Brace, 1 1/4" x 1/4" x 28"
c	1	Bolt, machine, 5/8" req'd. length	i	4	Bolt, carriage, 3/8" x 4 1/2"
d	11	Washer, 2 1/4" x 2 1/4" x 3/16", 1 3/16" hole	j	2	Screw, lag, 1/2" x 4"
f	4	Pin, crossarm, steel, 5/8" x 10 3/4"	n	2	Bolt, double arming, 5/8" req'd. length
g	2	Crossarm, 3 1/2" x 4 1/2" x 8'-0"	bs	1	Bolt, single upset, insulated

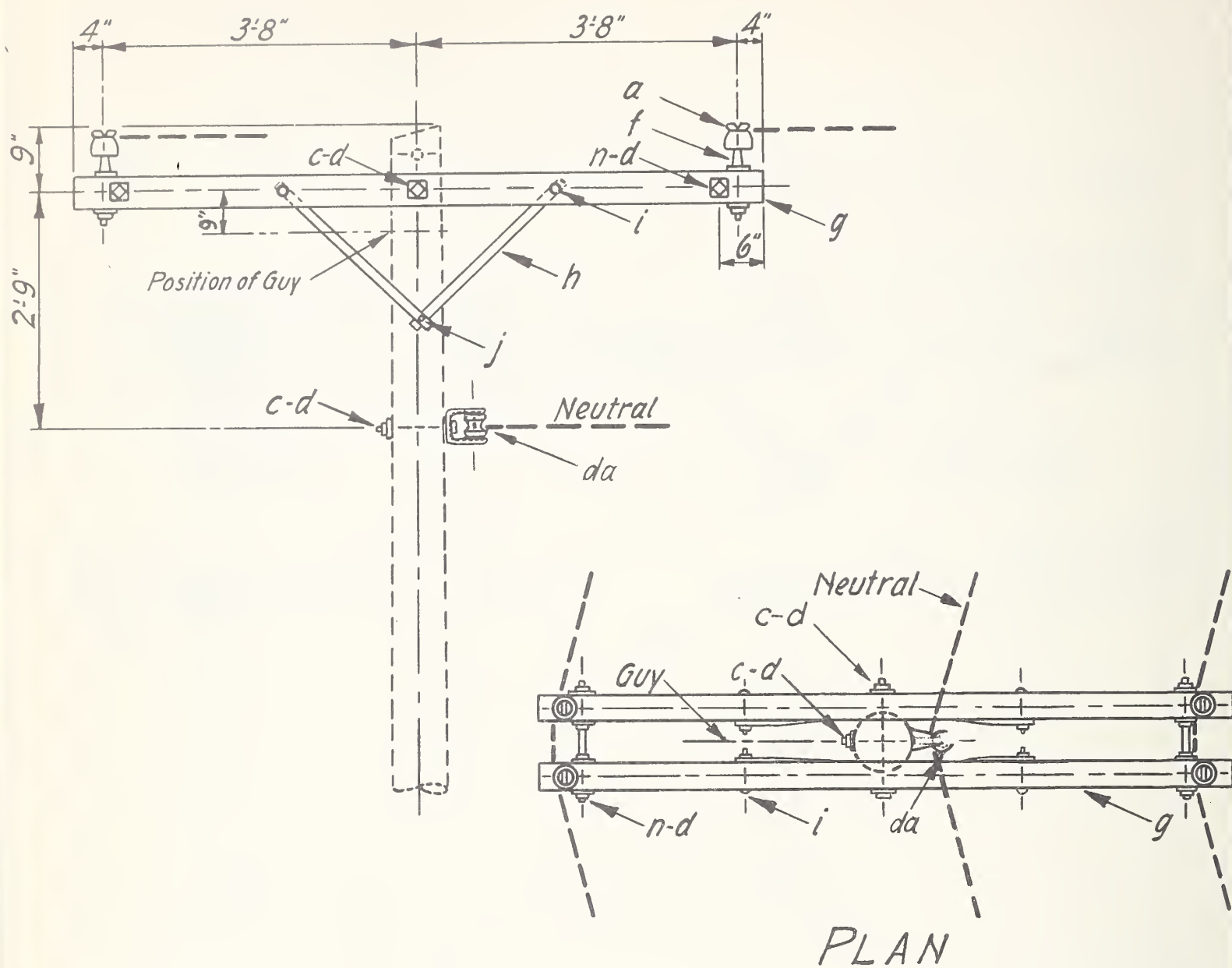
KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL  
CROSSARM CONSTR.- 0° TO 5° ANGLE, DOUBLE PRIMARY SUPPORT

Scale: 1/2" = 1'-0"

Date:

B1-1

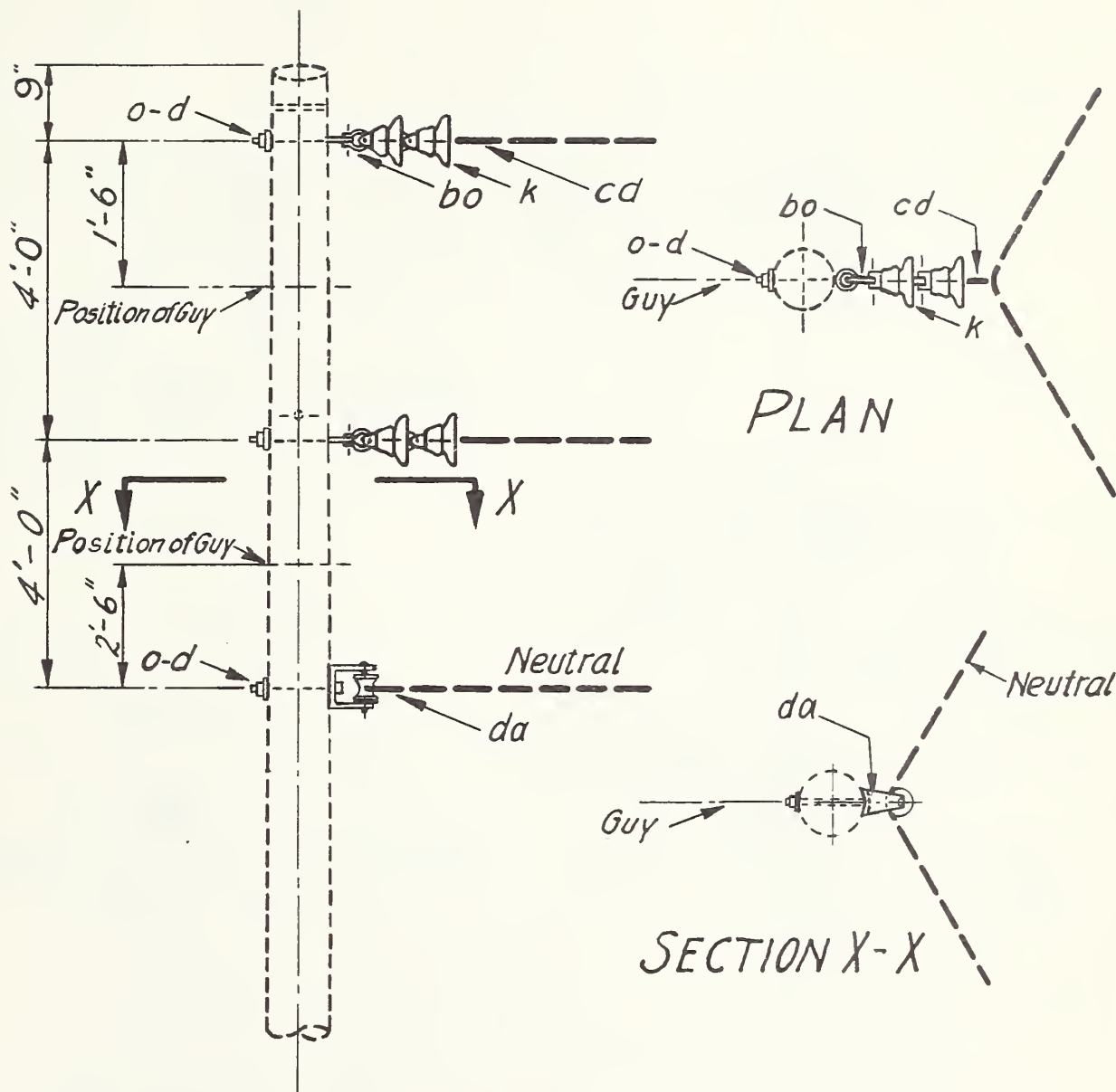
NO. REVISION DATE:



ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
a	4	Insulator, pin type	i	4	Bolt, carriage, $\frac{3}{8} \times 4\frac{1}{2}$ "
c	2	Bolt, machine, $\frac{5}{8}$ " req'd. length	j	2	Screw, lag, $\frac{1}{2} \times 4$ "
d	11	Washer, $2\frac{1}{4} \times 2\frac{1}{4} \times \frac{3}{16}$ , $\frac{13}{16}$ " hole	da	1	Bracket, insulated
f	4	Pin, crossarm, steel, $\frac{5}{8} \times 10\frac{3}{4}$	n	2	Bolt, double arming, $\frac{5}{8}$ " req'd. length
g	2	Crossarm, $3\frac{1}{2} \times 4\frac{1}{2} \times 8'-0"$			
h	4	Brace, $1\frac{1}{4} \times \frac{1}{4} \times 28"$			

-----KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL  
CROSSARM CONSTRUCTION - 5° TO 30° ANGLE

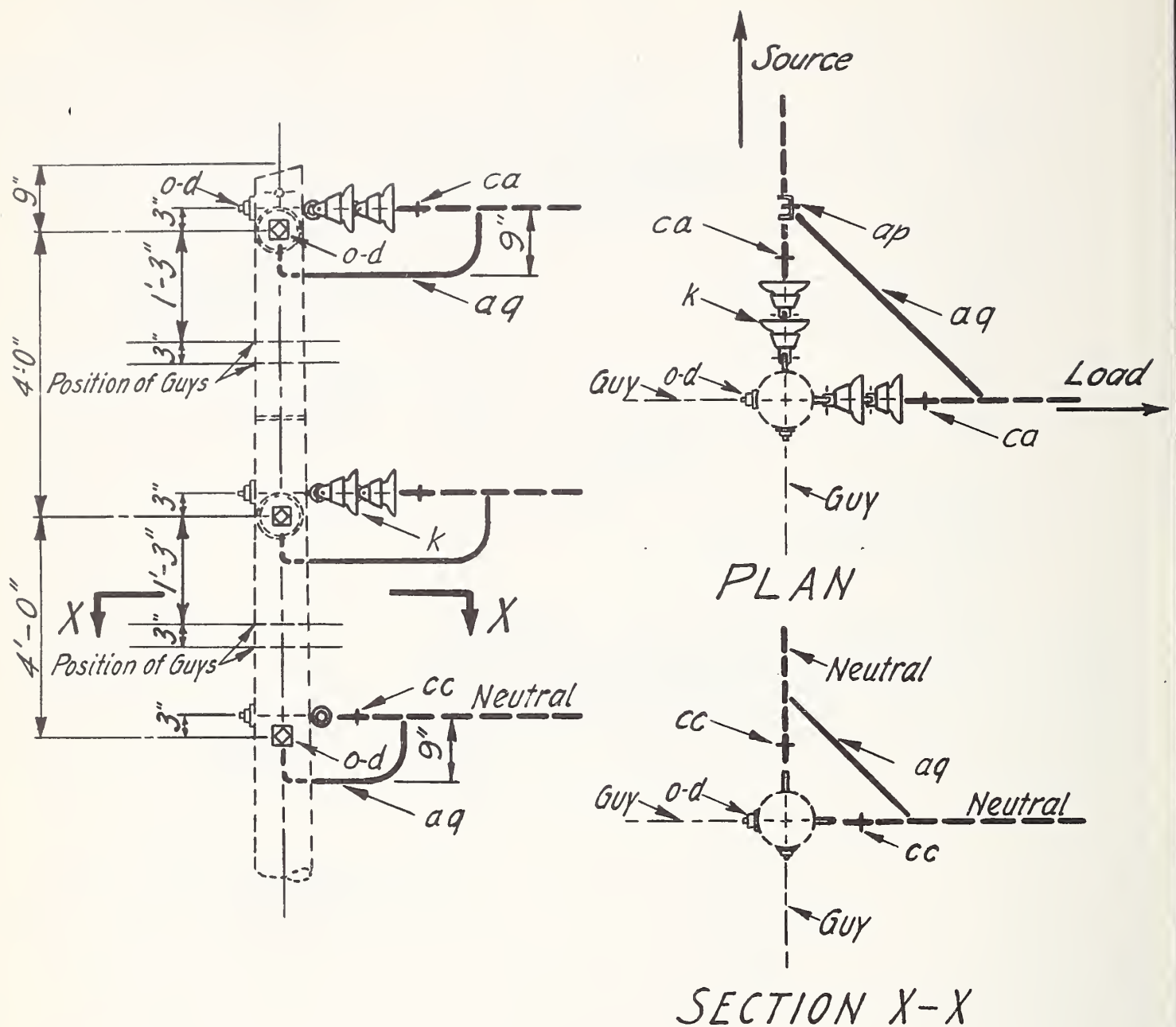
1	Changed neutral support	7/9/48	Scale: $\frac{1}{2}" = 1'-0"$	Date:
No.	REVISION	DATE:		B2R



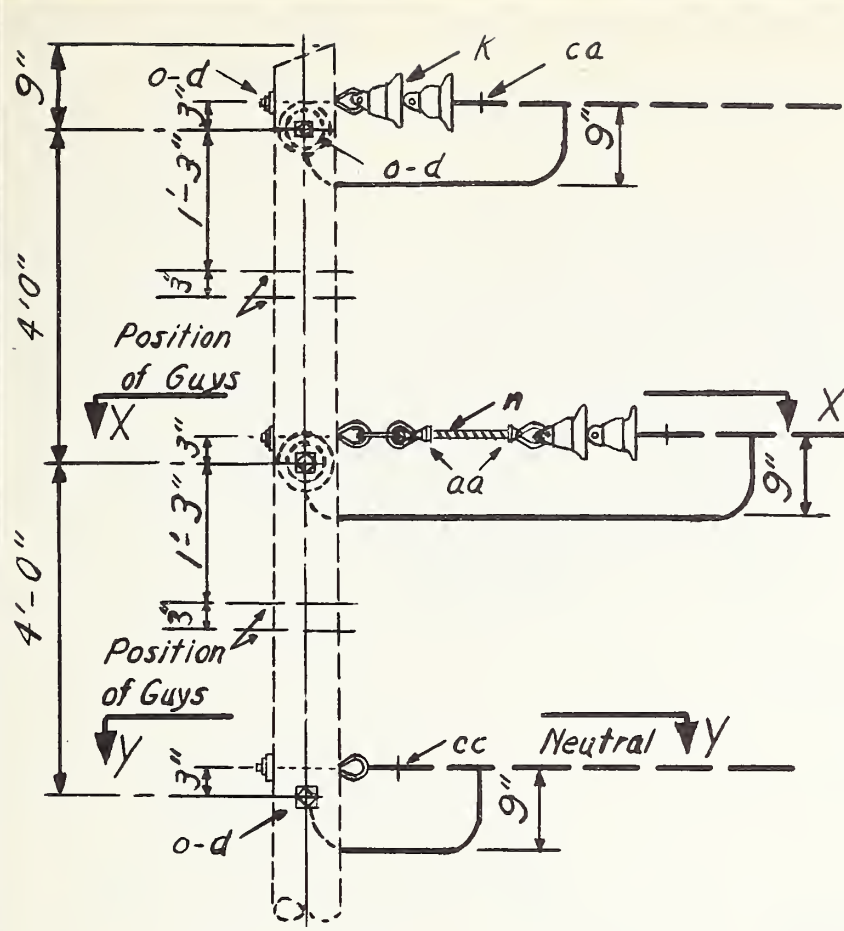
ITEM	No. REQD.	MATERIAL	ITEM	No. REQD.	MATERIAL
d	3	Washer, 2 1/4 x 2 1/4 x 3/16, 1 3/16 hole	cd	2	Angle assembly, primary
k	4	Insulator, suspension	da	1	Bracket, insulated
o	2	Bolt, eye, 5/8 x req'd. length	c	1	Bolt, machine, 5/8 x req'd. length
bo	2	Shackle, anchor.			

----- K.V. PRIMARY, TWO PHASE WIRES AND NEUTRAL  
VERTICAL CONSTRUCTION - 30° TO 60° ANGLE

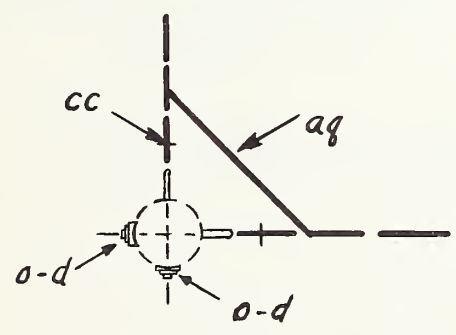
1	Changed neutral support	7/9/48	Scale: 1/2" = 1'-0"	Date:
No.	REVISION	DATE:		B3R



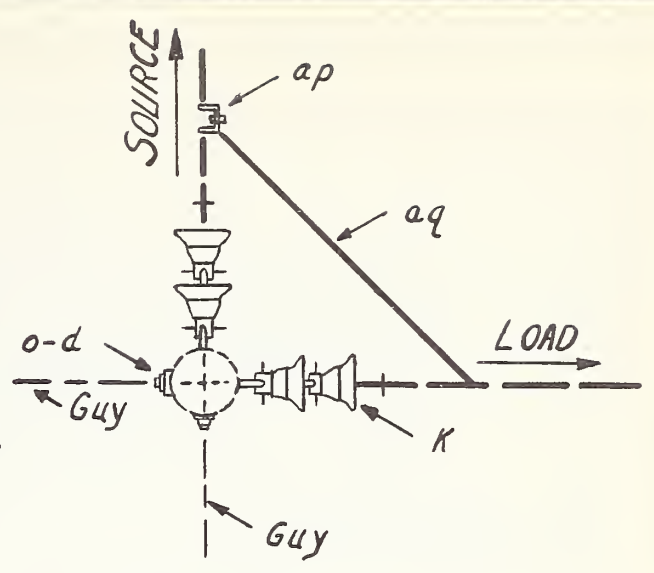
ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
d	6	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	o	6	Bolt, eye, 5/8" x req'd. length
k	8	Insulator, suspension	cc	2	Dead end assembly, neutral
ca	4	Dead end assembly, primary	aq		Jumpers
p		Connectors, as req'd.	-----KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL VERTICAL CONSTRUCTION - 60° TO 90° ANGLE Scale: 1/2" = 1'-0"		
ap	2	Clamp, hot line, tap assembly			
			Date:		
NO.			REVISION		
			DATE:		
			B4		



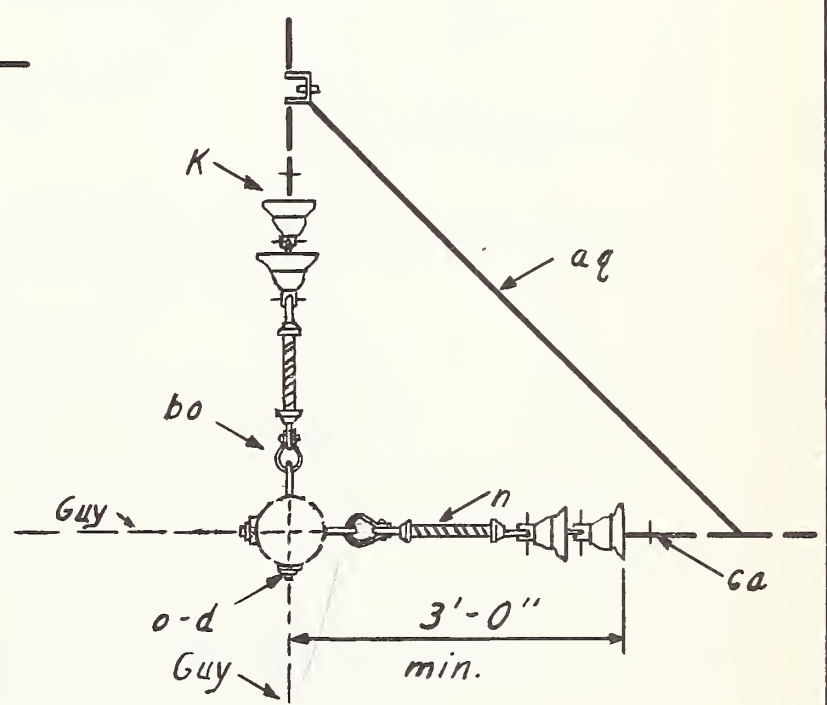
ELEVATION



SECTION Y-Y



PLAN



SECTION X-X

ITEM	NO. REQD.	MATERIAL	ITEM	NO. REQD.	MATERIAL
d	6	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	ap	2	Clamp, hot line, tap assembly
K	8	Insulator, suspension	aq		Jumpers
n	2	Bolt, double arming, 5/8" x req'd lgth.	bo	2	Shackle, anchor
o	6	Bolt, eye, 5/8" x required length	ca	4	Deadend assembly, primary
p		Connectors, as required	cc	2	Deadend assembly, neutral
aa	4	Nut, eye, 5/8"			

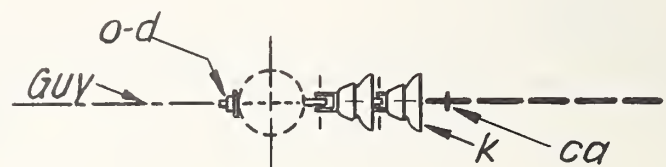
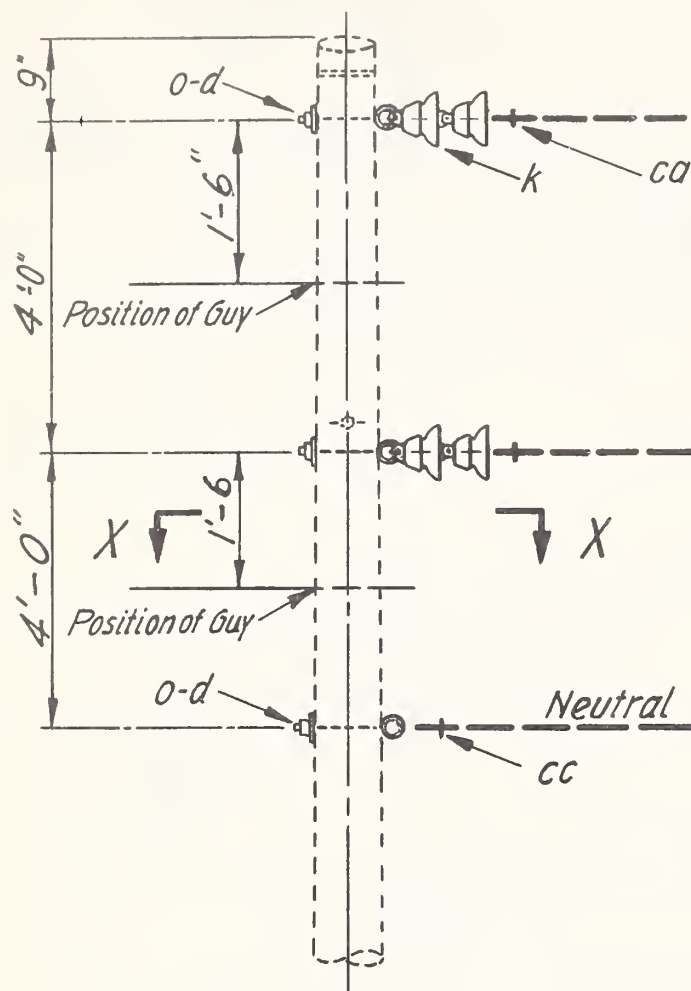
KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL  
VERTICAL CONSTRUCTION - 60° TO 90° ANGLE

Scale: 1/2" = 1'-0"

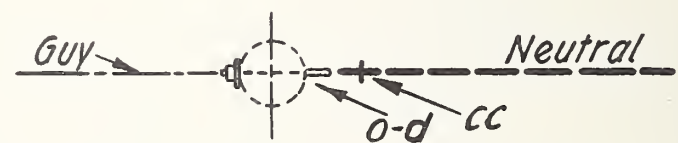
Date: Mar. 9, 1949

NO.	REVISION	DATE
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B 4-1



PLAN



SECTION X-X

ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
d	3	Washer, 2 1/4 x 2 1/4 x 3/16, 13/16 hole	o	3	Bolt, eye, 5/8 req'd. length
k	4	Insulator, suspension	cc	1	Dead end assembly, neutral
ca	2	Dead end assembly, primary			

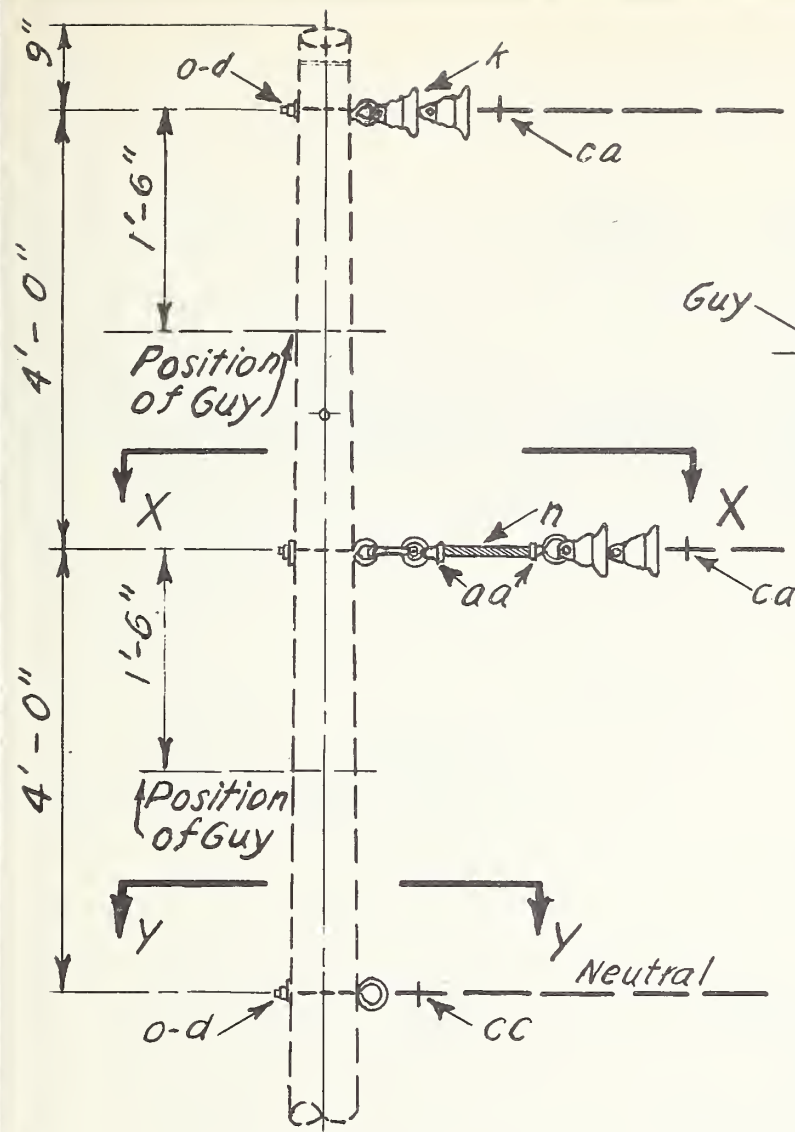
-----KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL  
VERTICAL CONSTRUCTION-DEAD END(SINGLE)

Scale: 1/2" = 1'-0"

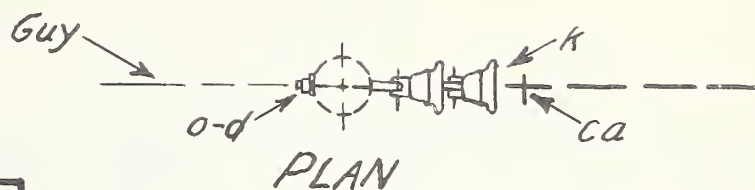
Date:

NO. REVISION DATE:

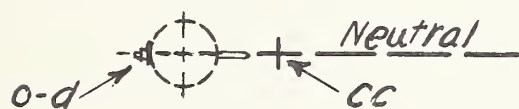
B5



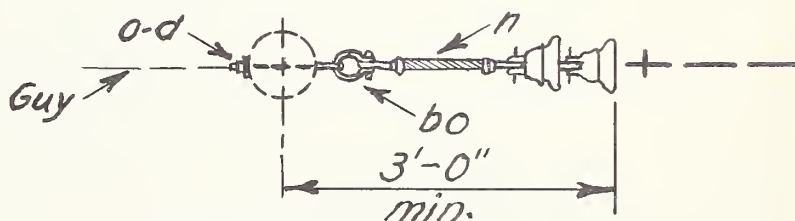
ELEVATION



PLAN



SECTION Y-Y



SECTION X-X

ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
d	3	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	bo	1	Shackle, anchor
k	4	Insulator, suspension	ca	2	Deadend assembly, primary
n	1	Bolt, double arming, 5/8" x req'd. lgt.	cc	1	Deadend assembly, neutral
o	3	Bolt, eye, 5/8" x required length			
aa	2	Nut, eye, 5/8"			

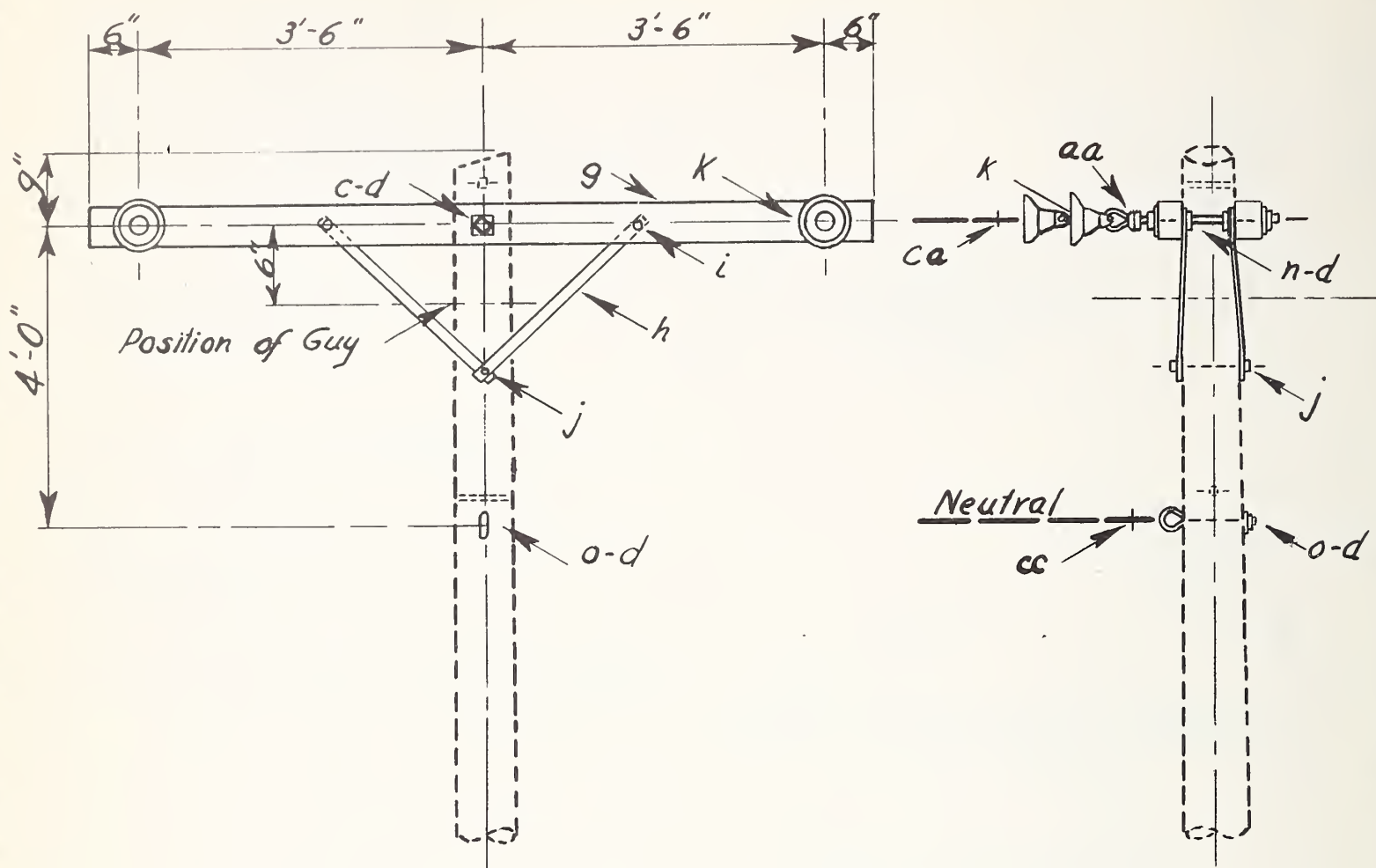
----- KV. PRIMARY TWO PHASE WIRES AND NEUTRAL  
VERTICAL CONSTRUCTION-DEAD END (SINGLE)

Scale: 1/2" = 1'-0"

Date: March 2, 1949

NO. REVISION DATE:

B5-1



Note :-

When crossarm guys are required  
refer to drawing E5-1R

ITEM	NO. REQ'D.	MATERIAL	ITEM	NO. REQ'D.	MATERIAL
c	1	Bolt, machine, $\frac{5}{8}$ " x req'd. length	k	4	Insulator, suspension
d	11	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{3}{16}$ " hole	n	2	Bolt, double arming, $\frac{5}{8}$ " x req'd. l'gth.
g	2	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 8'-0"	o	1	Bolt, eye, $\frac{5}{8}$ " x req'd. length
h	4	Brace, $1\frac{1}{4}$ " x $\frac{1}{4}$ " x 28"	aa	2	Nut, eye, $\frac{5}{8}$ "
i	4	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "	ca	2	Deadend assembly, primary
j	2	Screw, lag, $\frac{1}{2}$ " x 4"	cc	1	Deadend assembly, neutral

KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL  
CROSSARM CONSTRUCTION - DEAD END(SINGLE)

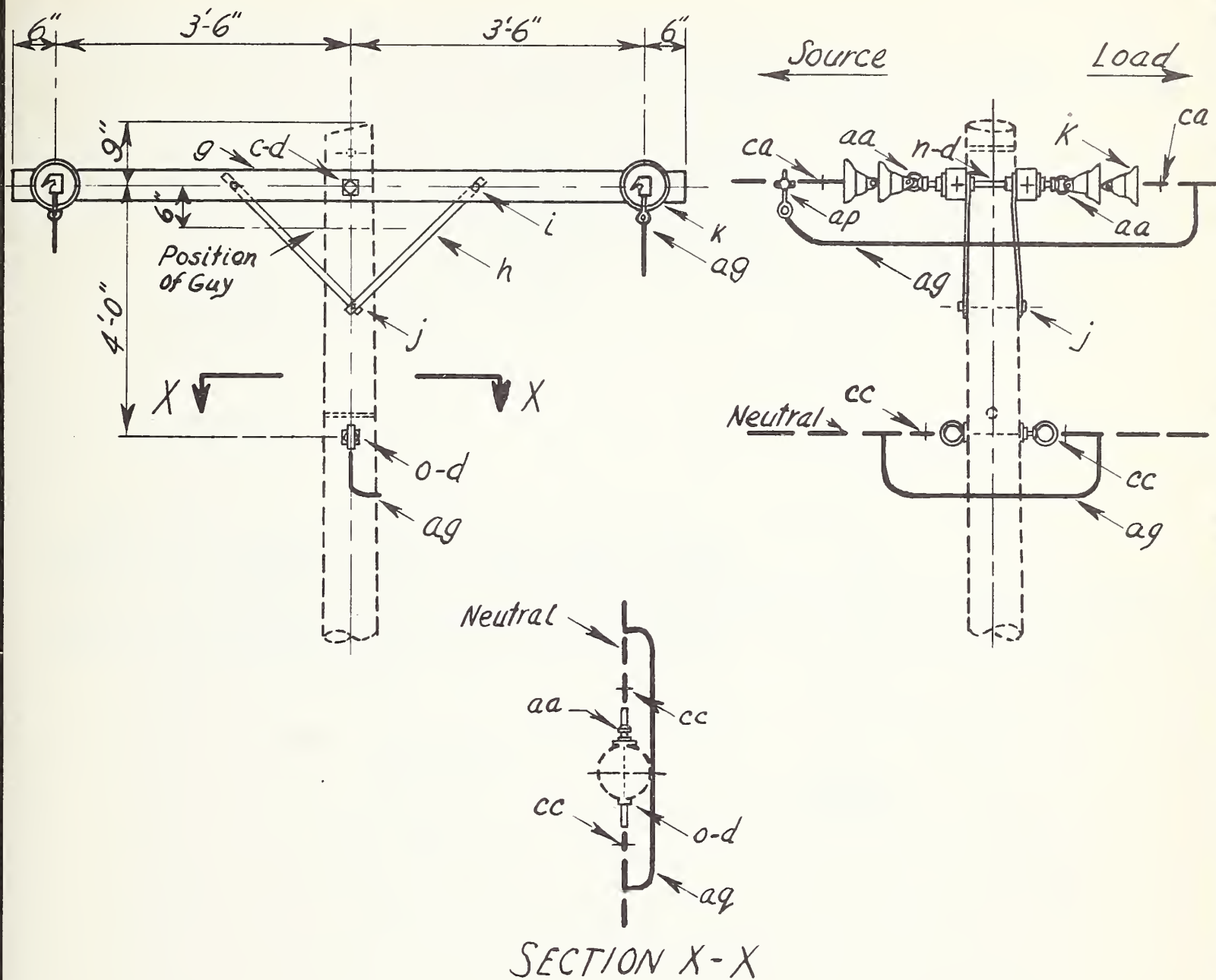
Scale:  $\frac{1}{2}$ " = 1'-0"

Date: Apr. 18, 1949

Nº. REVISION

DATE

B T R



ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
c	1	Bolt, machine, $\frac{5}{8}$ " x req'd. length	o	1	Bolt, eye, $\frac{5}{8}$ " x req'd. length
d	12	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{1}{16}$ " hole	p		Connectors, as req'd.
g	2	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 8'-0"	aa	5	Nut, eye, $\frac{5}{8}$ "
h	4	Brace, $1\frac{1}{4}$ " x $\frac{1}{4}$ " x 28"	ag		Jumpers
i	4	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "	ap	2	Clamp, hot line, tap assembly
j	2	Screw, lag, $\frac{1}{2}$ " x 4"	ca	4	Deadend assembly, primary
k	8	Insulator, suspension	cc	2	Deadend assembly, neutral
n	2	Bolt, double arming, $\frac{5}{8}$ " x req'd. length			

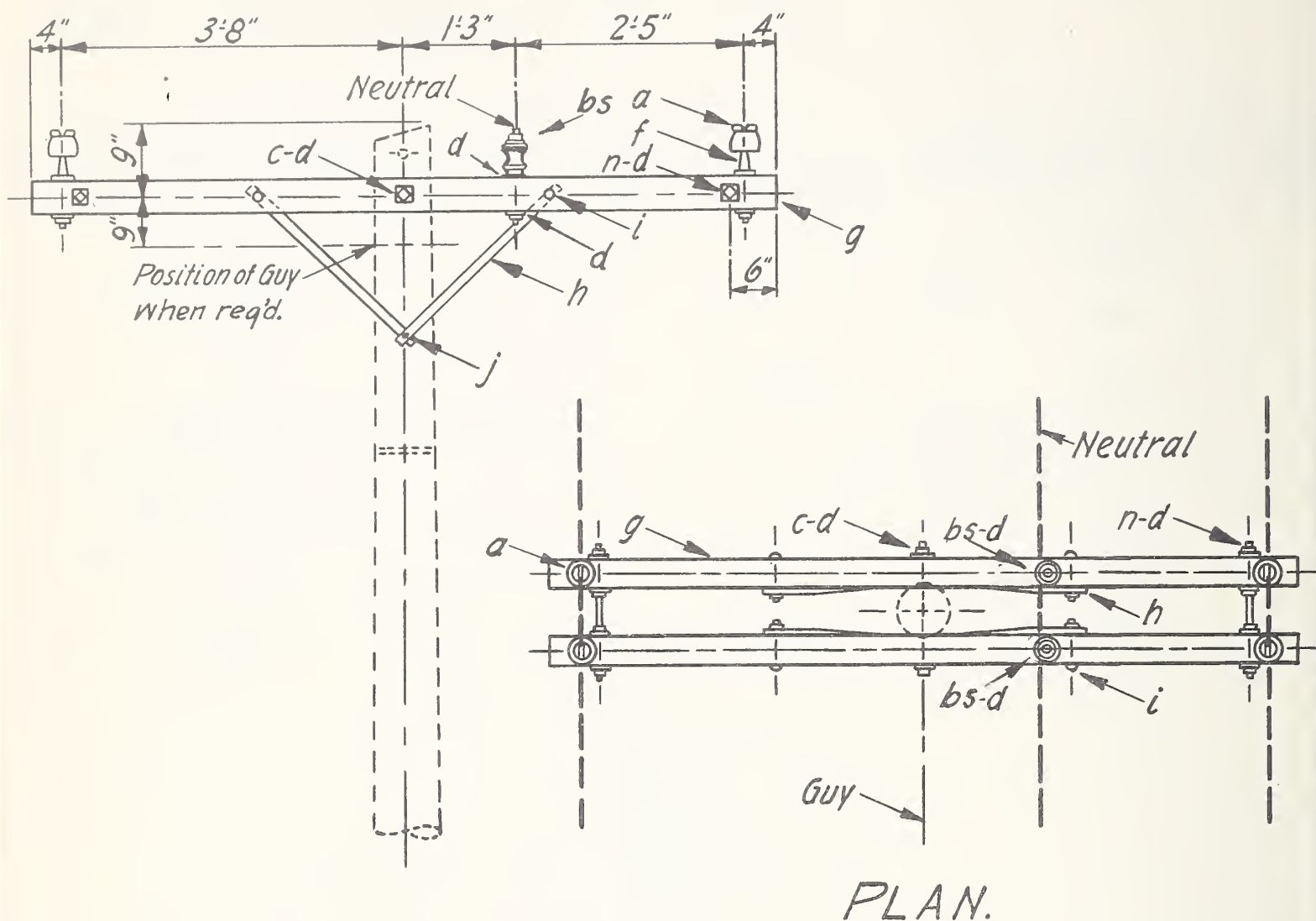
KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL  
CROSSARM CONSTRUCTION - DEADEND (DOUBLE)

Scale:  $\frac{1}{2}$ " = 1'-0"

Date: Apr. 19, 1949

No. REVISION Date

B 8 R



ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
a	4	Insulator, pin type	h	4	Brace, 1/4"x1/4"x28"
c	1	Bolt, machine, 5/8"xreq'd. length	i	4	Bolt, carriage, 3/8"x4 1/2"
d	14	Washer, 2 1/4"x2 1/4"x3/16", 13/16" hole	j	2	Screw, lag, 1/2"x4"
f	4	Pin, crossarm, steel, 5/8"x10 3/4"	n	2	Bolt, double arming, 5/8"xreq'd. length
g	2	Crossarm, 3 1/2"x4 1/2"x8'-0"	bs	2	Bolt, single upset, insulated.

-----KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL  
CROSSARM CONSTRUCTION- DOUBLE LINE ARM

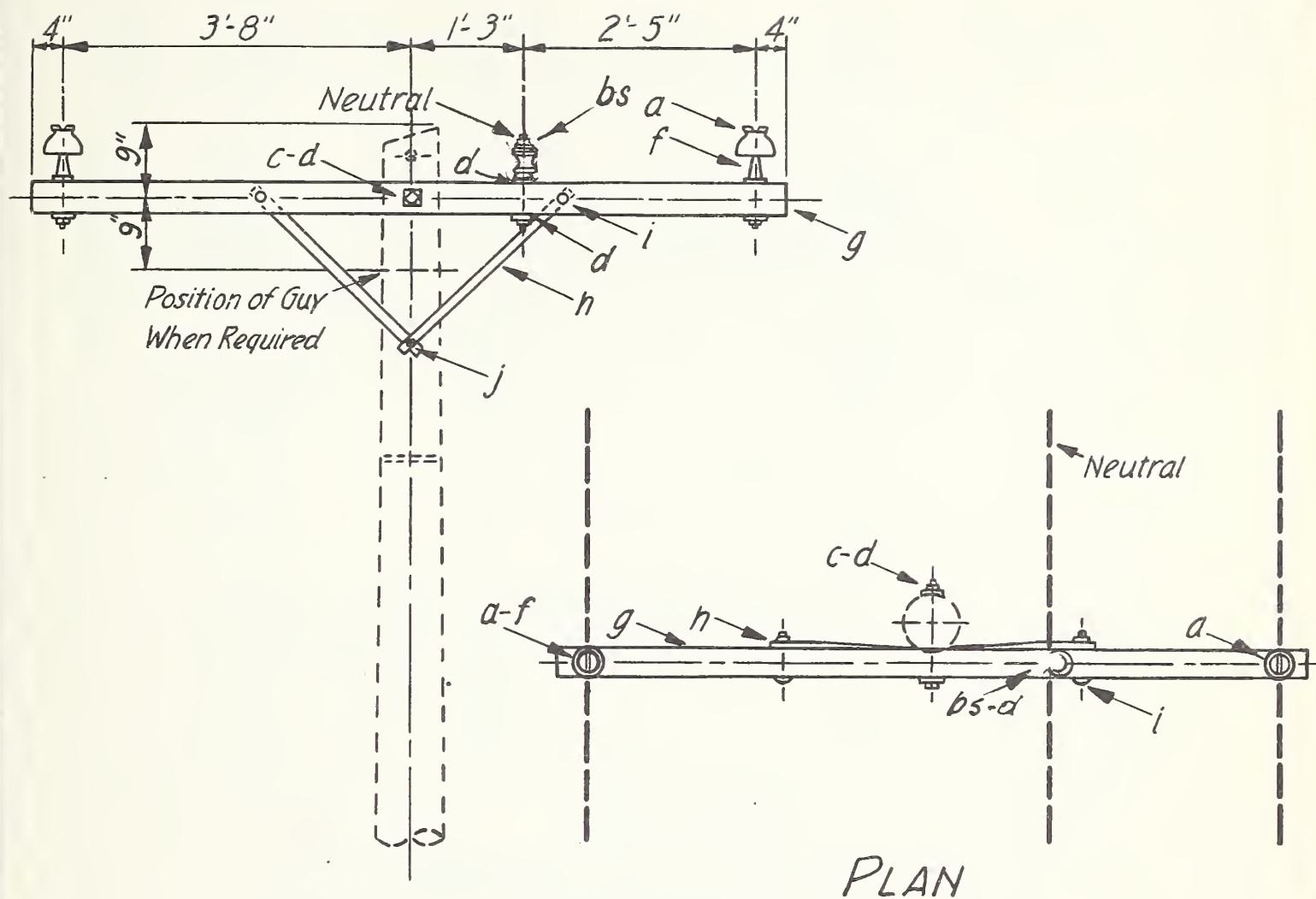
Scale: 1/2"=1'-0"

Date:

1 Changed neutral support 6/14/48

NO. REVISION DATE:

B9R



ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
a	2	Insulator, pin type	h	2	Brace, 1/4" x 1/4" x 28"
c	1	Bolt, machine, 5/8" x req'd. length	i	2	Bolt, carriage, 3/8" x 4 1/2"
d	4	Washer, 2 1/4" x 2 1/4" x 3/16", 1 3/16" hole	j	1	Screw, lag, 1/2" x 4"
f	2	Pin, crossarm, steel, 5/8" x 10 3/4"	bs	1	Bolt, single upset, insulated.
g	1	Crossarm, 3 1/2" x 4 1/2" x 8'-0"			

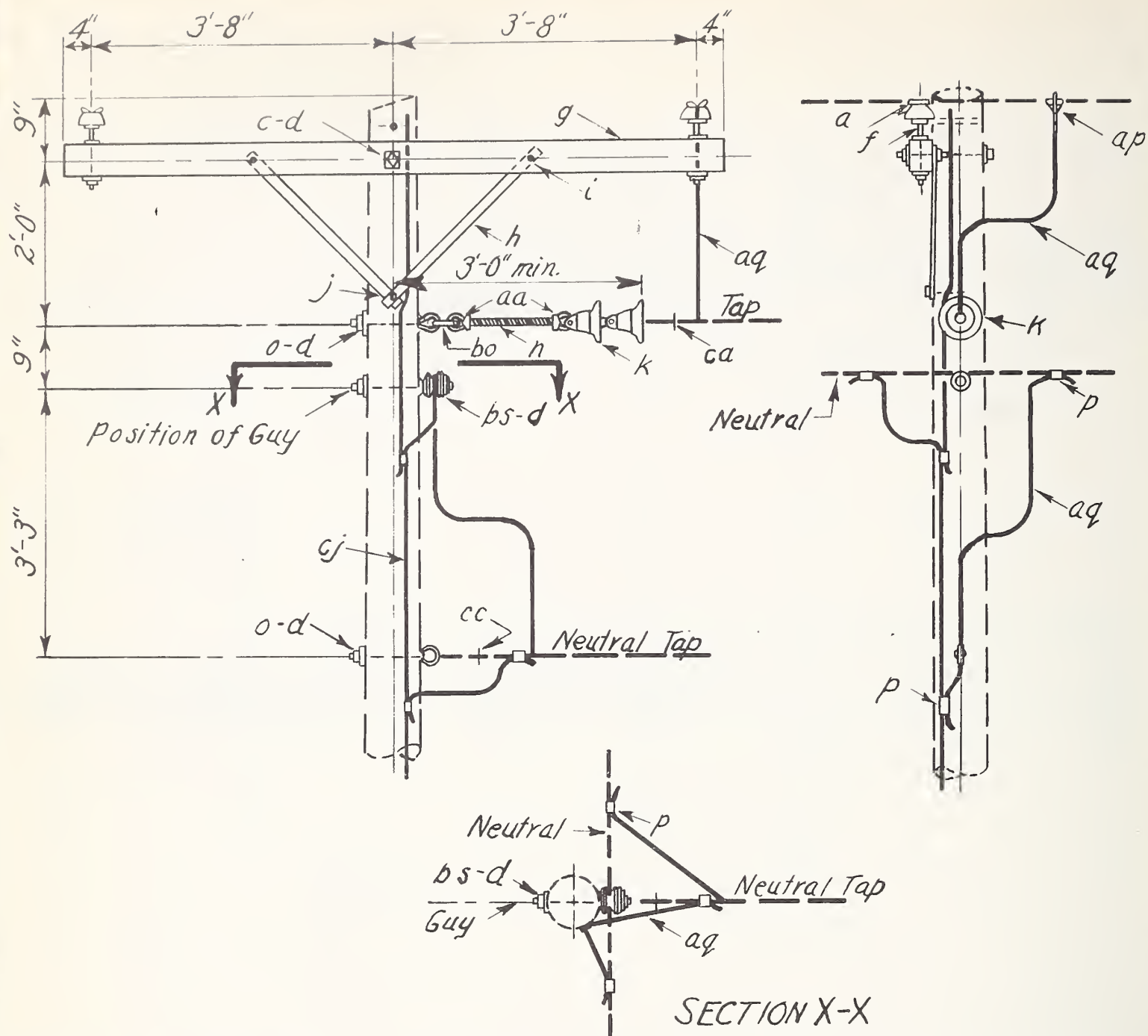
KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL  
CROSSARM CONSTRUCTION - SINGLE LINE ARM

Scale: 1/2" = 1'-0"

Date:

1	Changed neutral support	6/14/48
NO.	REVISION	DATE:

B9-1R



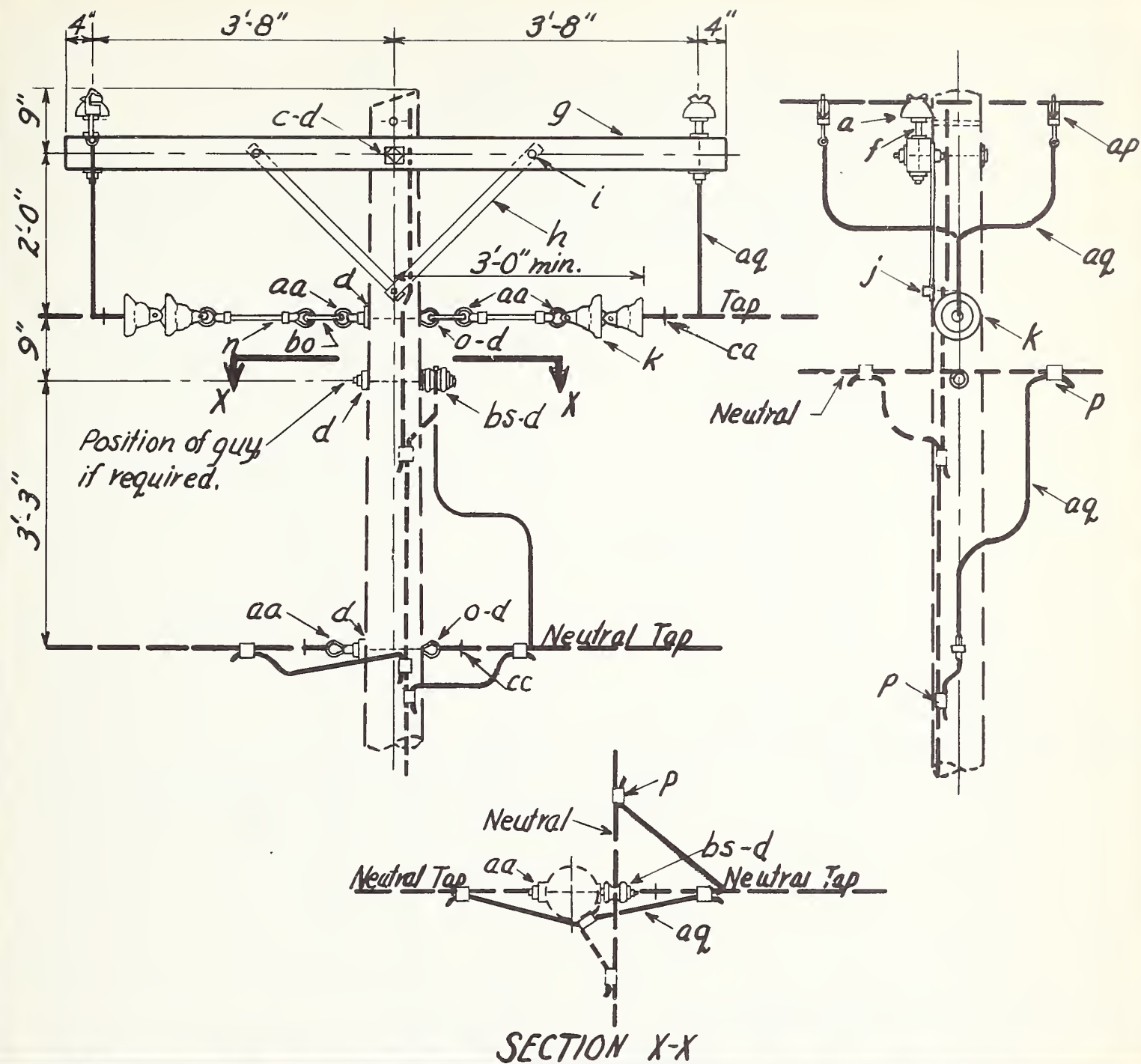
ITEM	NO. REQ'D.	MATERIAL	ITEM	NO. REQ'D.	MATERIAL
a	2	Insulator, pin type	o	2	Bolt, eye, $\frac{5}{8}$ " x req'd. length
c	1	Bolt, machine, $\frac{5}{8}$ " x req'd. length	p		Connectors, as req'd.
d	5	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{1}{16}$ " hole	ap	1	Clamp, hot line
f	2	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "	aq		Jumpers
g	1	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 8'-0"	bs	1	Bolt, single upset, insulated
h	2	Brace, flat, $1\frac{1}{4}$ " x $\frac{1}{4}$ " x 28"	ca	1	Deadend assembly, primary
i	2	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "	cc	1	Deadend assembly, neutral
j	1	Screw, 1/4", $\frac{1}{2}$ " x 4"	cj		Ground wire assembly and rod
K	2	Insulator, suspension	n	1	Bolt, double arming, $\frac{5}{8}$ " x req'd. l/gh.
aa	2	Nut, eye, $\frac{5}{8}$ "	bo	1	Shackle, anchor

KV PRIMARY, TWO PHASE WIRES AND NEUTRAL  
CROSSARM CONSTR.: SINGLE-PHASE TAP AT 0° TO 5° ANGLE  
Scale:  $\frac{1}{2}$ " = 1'-0"

Date: Apr. 5, '49

No. REVISION DATE

B21R



ITEM	NO. REQ'D.	MATERIAL	ITEM	NO. REQ'D.	MATERIAL
a	2	Insulator, pin type	o	2	Bolt, eye, $\frac{5}{8}$ " x req'd. length
c	1	Bolt, machine, $\frac{5}{8}$ " x req'd. length	p		Connectors, as req'd.
d	7	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole	aa	6	Nut, eye, $\frac{5}{8}$ "
f	2	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "	ap	2	Clamp, hot line, tap assembly
g	1	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x $8'-0"$	aq		Jumpers and leads, as req'd.
h	2	Brace, flat, $1\frac{1}{4}$ " x $\frac{1}{4}$ " x 28"	bo	2	Shackle, anchor
i	2	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "	bs	1	Bolt, single upset, insulated
j	1	Screw, lag, $\frac{1}{2}$ " x 4"	ca	2	Deadend assembly, primary
k	4	Insulator, suspension	cc	2	Deadend assembly, neutral
n	2	Bolt, double arming, $\frac{5}{8}$ " x req'd. length			

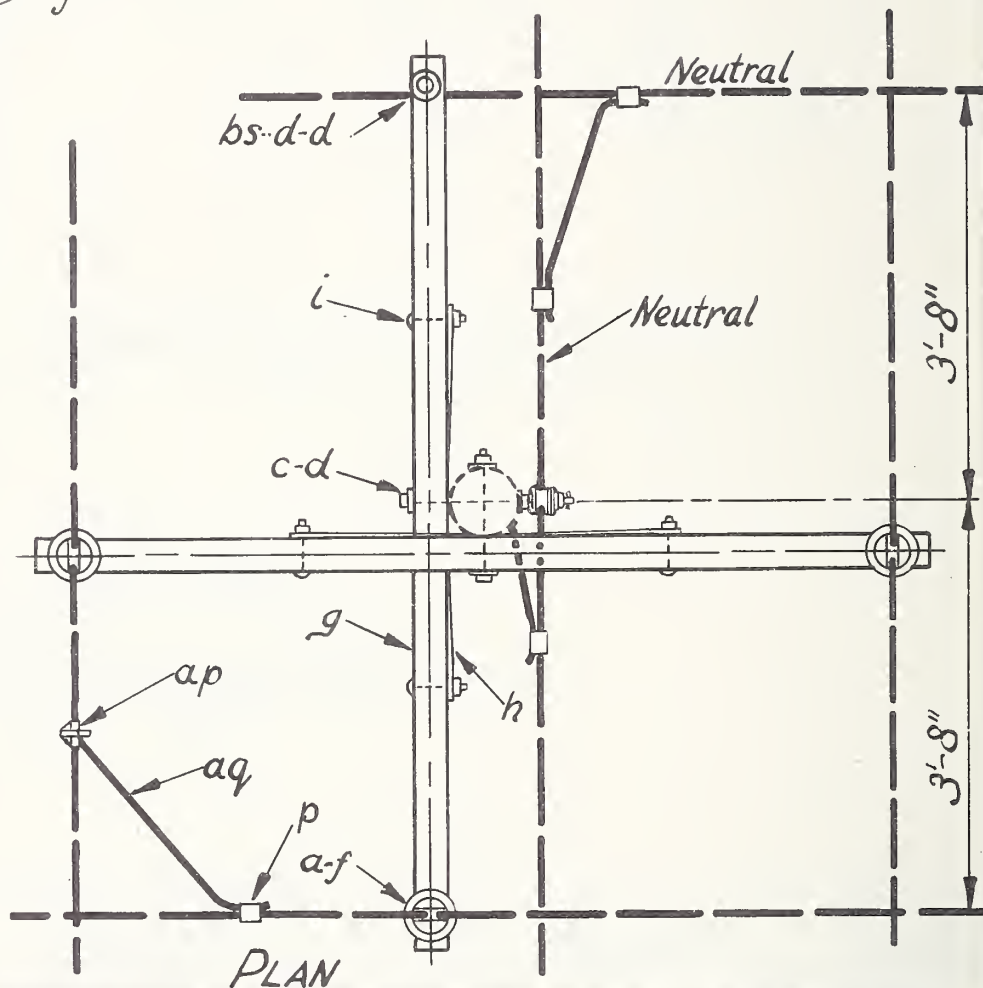
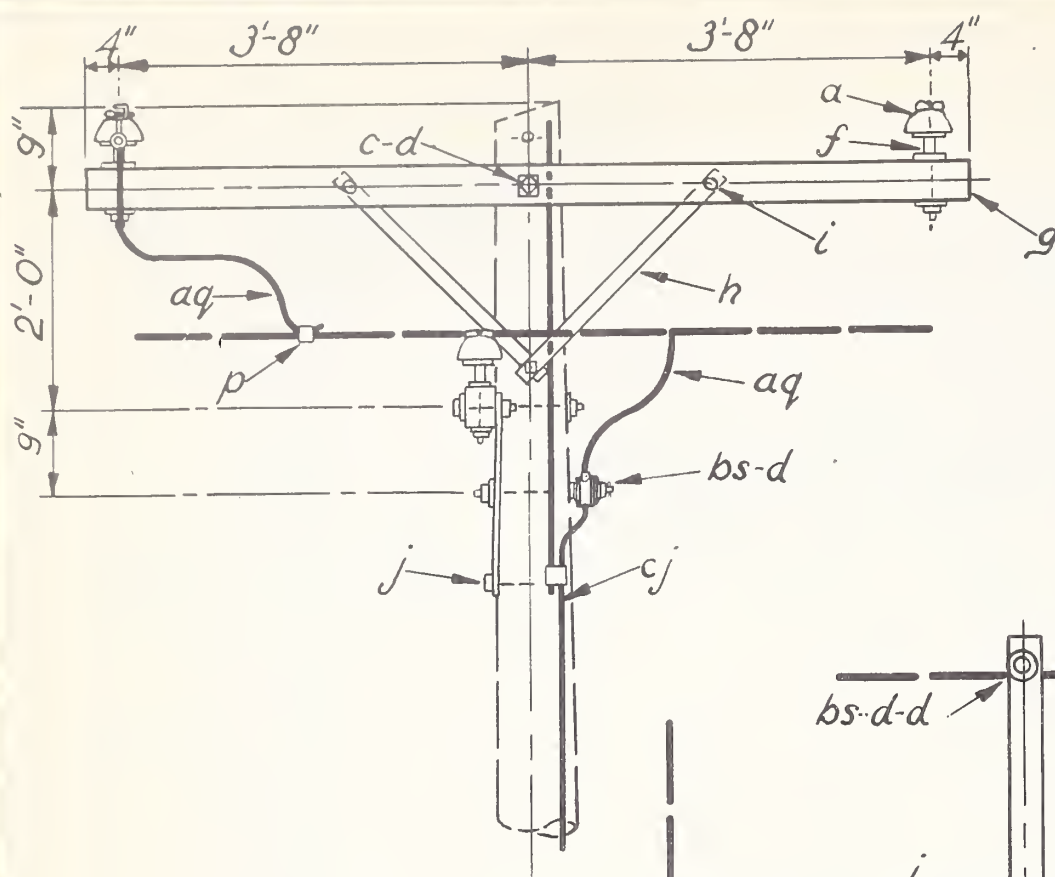
KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL  
CROSSARM CONST.-TWO SINGLE PHASE TAPS AT 0° TO 5° ANGLE

Scale:  $\frac{1}{2}$ " = 1'-0"

Date: May 13, 1949

No. REVISION Date

B21-1



ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
a	3	Insulator, pin type	j	2	Screw, lag, 1/2"x4"
c	2	Bolt, machine, 5/8"x req'd. length	p		Connectors, as req'd.
d	7	Washer, 2 1/4"x 2 1/4"x 3/16", 1 3/16" hole			
f	3	Pin, crossarm, steel, 5/8"x 10 1/4"	ap	1	Clamp, hot line
g	2	Crossarm, 3 1/2"x 4 1/2"x 8'-0"	aq		Jumpers
h	4	Brace, flat, 1 1/4"x 1/4"x 28"	bs	2	Bolt, single upset, insulated
i	4	Bolt, carriage, 3/8"x 4 1/2"	cj		Ground wire assembly and rod

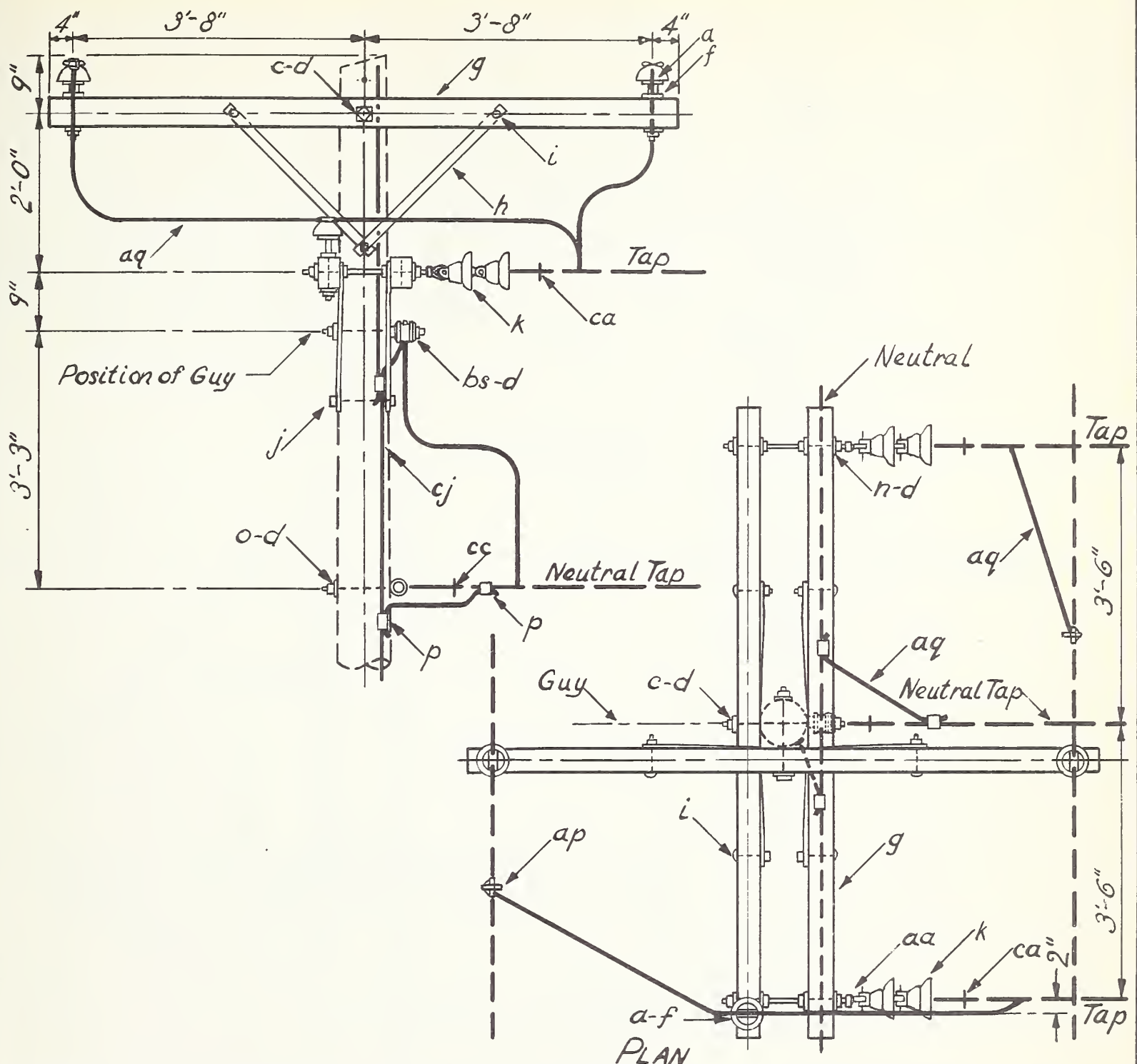
-----KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL  
CROSSARM CONSTR.-SINGLE-PHASE JUNCTION AT 0° TO 5° ANGLE

Scale: 1/2" = 1'-0"

Date: Apr. 21, '49

No. REVISION DATE

B22R



ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
a	3	Insulator, pin type	o	1	Bolt, eye, $\frac{5}{8}$ " x req'd. length
c	2	Bolt, machine, $\frac{5}{8}$ " x req'd. length	p		Connectors, as req'd.
d	14	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{3}{16}$ " hole	aa	2	Nut, eye, $\frac{5}{8}$ "
f	3	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "	ap	2	Clamp, hot line
g	3	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 8'-0"	aq		Jumpers
h	6	Brace, flat, $1\frac{1}{4}$ " x $\frac{1}{4}$ " x 28"	bs	1	Bolt, single upset, insulated
i	6	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "	ca	2	Deadend assembly, primary
j	3	Screw, lag, $\frac{1}{2}$ " x 4"	cc	1	Deadend assembly, neutral
k	4	Insulator, suspension	cj		Ground wire assembly and rod
n	2	Bolt, double arming, $\frac{5}{8}$ " x req'd. length			

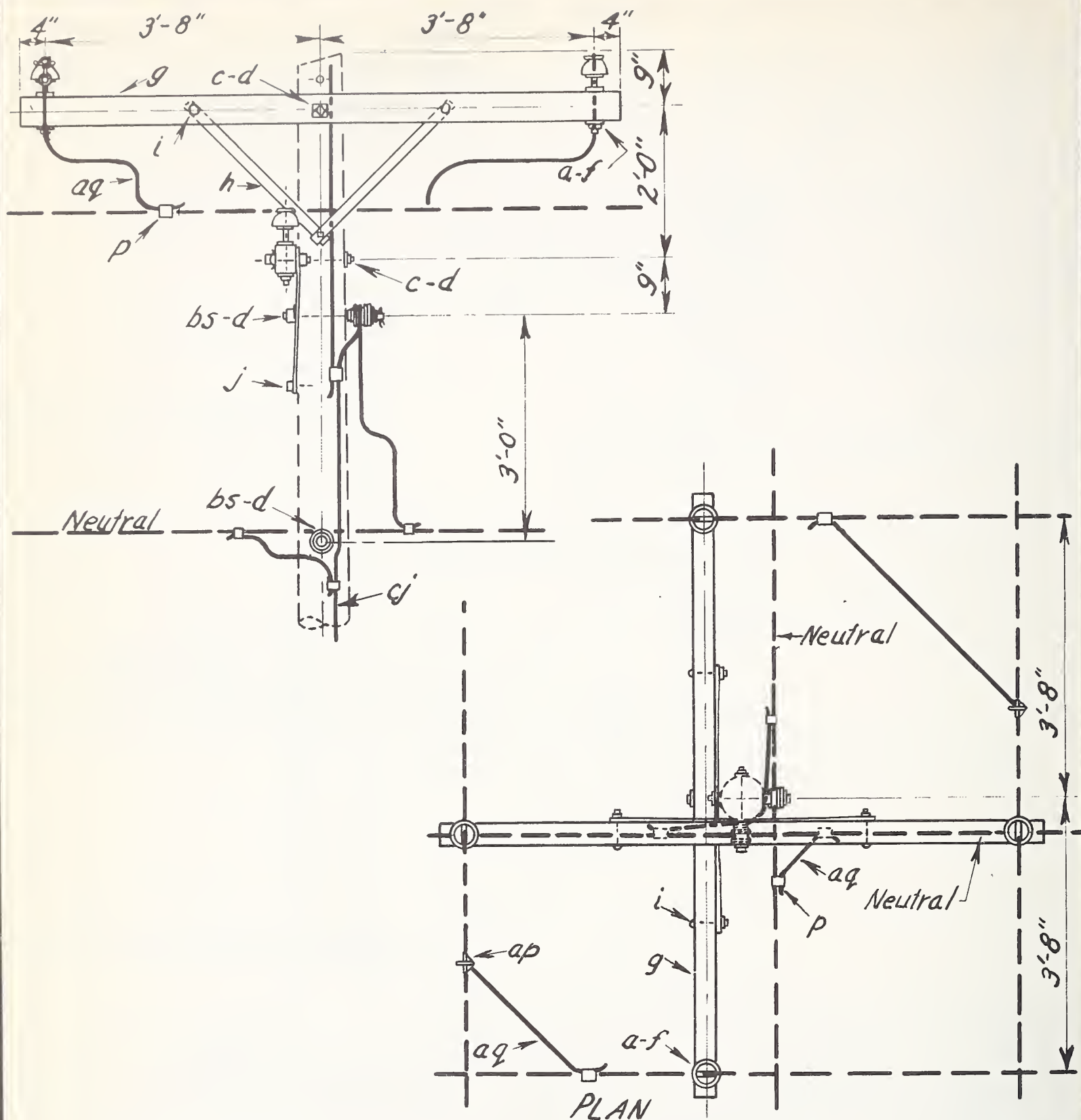
-----KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL  
CROSSARM CONSTR.: TWO-PHASE TAP AT 0° TO 5° ANGLE

Scale:  $\frac{1}{2}$ " = 1'-0"

Date: Apr 6, '49

No. REVISION DATE

B23D



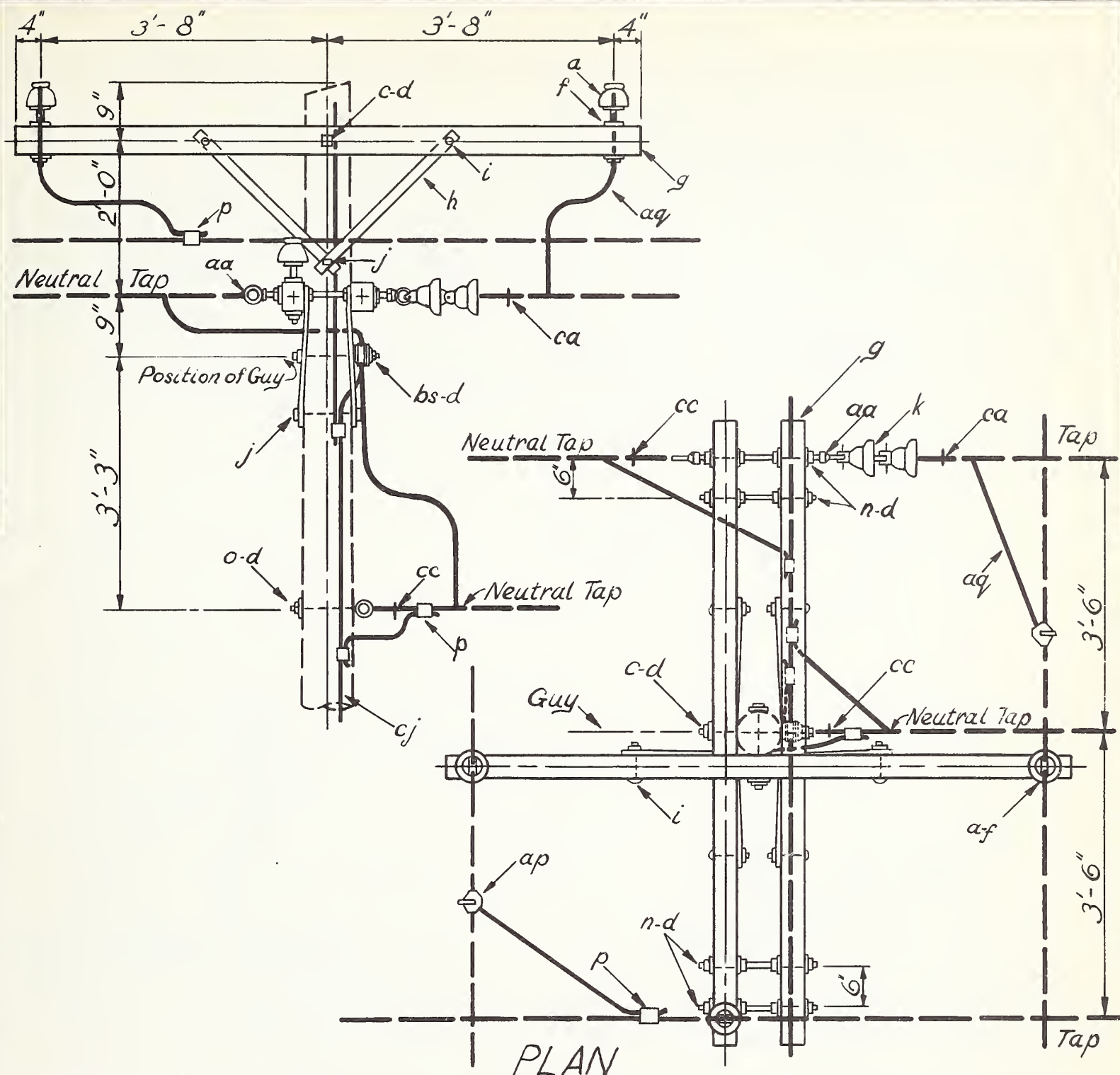
ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
a	4	Insulator, pin type	j	2	Screw, lag, 1/2"x4"
c	2	Bolt, machine, 5/8"x req'd. length	p		Connectors, as req'd.
d	6	Washer, 2 1/4"x 2 1/4"x 3/16", 13/16" hole	ap	2	Clamp, hot line, tap assembly
f	4	Pin, crossarm, steel, 5/8"x 10 1/4"	aq		Jumpers
g	2	Crossarm, 3 1/2"x 4 1/2"x 8'-0"	bs	2	Bolt, single upset, insulated
h	4	Brace, 1 1/4"x 1/4"x 28"	cj		Ground wire assembly and rod
i	4	Bolt, carriage, 3/8"x 4 1/2"			

KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL  
CROSSARM CONSTR, - TWO-PHASE JUNCTION, AT 0° TO 5° ANGLE  
Scale: 1/2" = 1'-0"

Date: Apr. 21, 1949

B24R

No. REVISION DATE



ITEM	NO. REQ'D.	MATERIAL	ITEM	NO. REQ'D.	MATERIAL
a	3	Insulator, pin type	p		Connectors, as req'd.
c	2	Bolt, machine, $\frac{5}{8}$ " x req'd. length	aa	2	Nut, eye, $\frac{5}{8}$ "
d	22	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{1}{16}$ " hole	ag		Jumpers
f	3	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "	bs	1	Bolt, single upset, insulated
g	3	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 8'-0"	ca	1	Deadend assembly, primary
h	6	Brace, $\frac{1}{4}$ " x $\frac{1}{4}$ " x 28"	cc	2	Deadend assembly, neutral
i	6	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "	ap	2	Clamp, hot line, tap assembly
j	3	Screw, lag, $\frac{1}{2}$ " x 4"	n	4	Bolt, d'ble arming, $\frac{5}{8}$ " x req'd. lgth.
k	2	Insulator, suspension	cf	1	Ground wire assembly and rod
o	1	Bolt, eye, $\frac{5}{8}$ " x req'd. length			

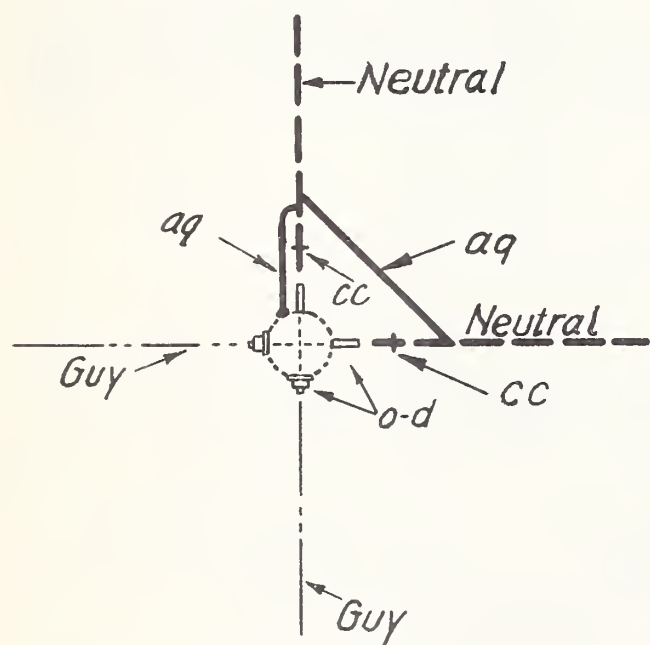
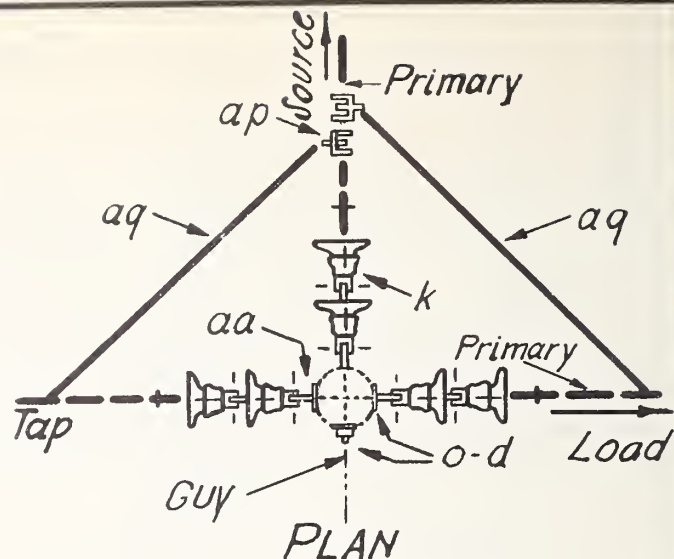
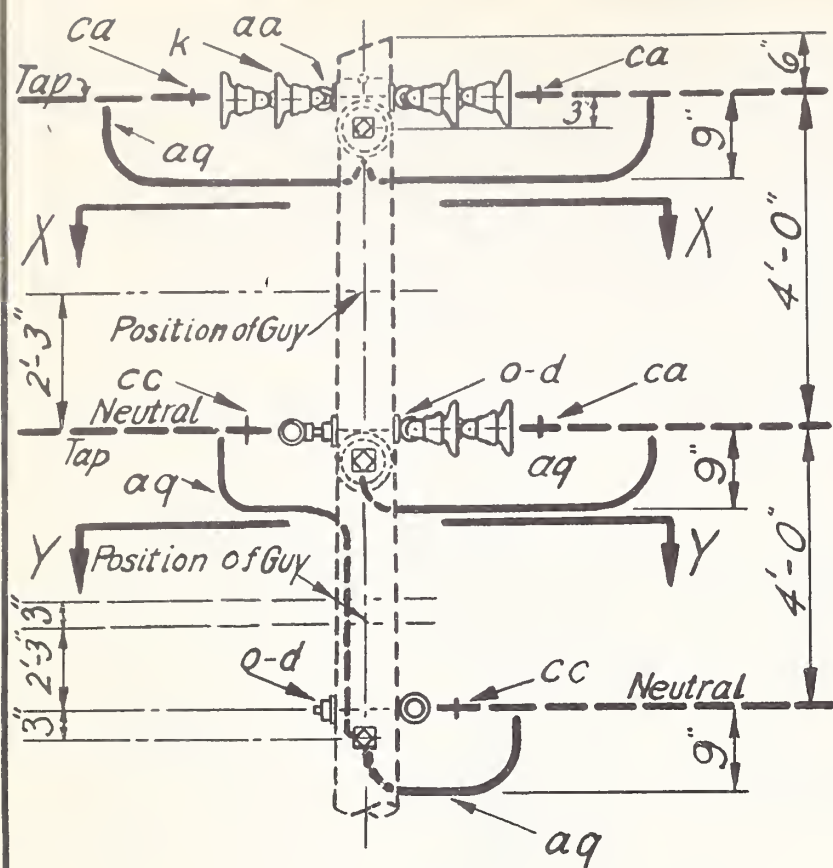
K.V. PRIMARY, TWO PHASE WIRES AND NEUTRAL  
CROSSARM CONSTR-1 PHASE AND 2 PHASE TAPS AT 0° TO 5° ANGLE

Scale:  $\frac{1}{2}$ " = 1'-0"

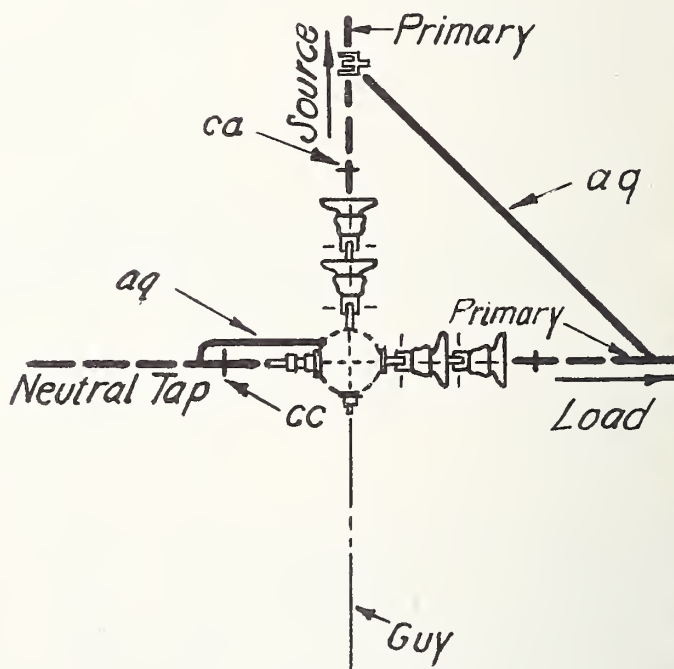
Date: Apr. 19, '49

NO. REVISION DATE

B27R1



SECTION Y-Y



SECTION X-X

ITEM	No REQ'D	MATERIAL	ITEM	No REQ'D	MATERIAL
d	8	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	aq		Jumpers
k	10	Insulator, suspension	ca	5	Deadend assembly, primary
o	6	Bolt, eye, 5/8" x req'd. length	cc	3	Deadend assembly, neutral
aa	2	Nut, eye, 5/8"	ap	3	Clamp, hot line, tap assembly
p		Connectors, as req'd.			

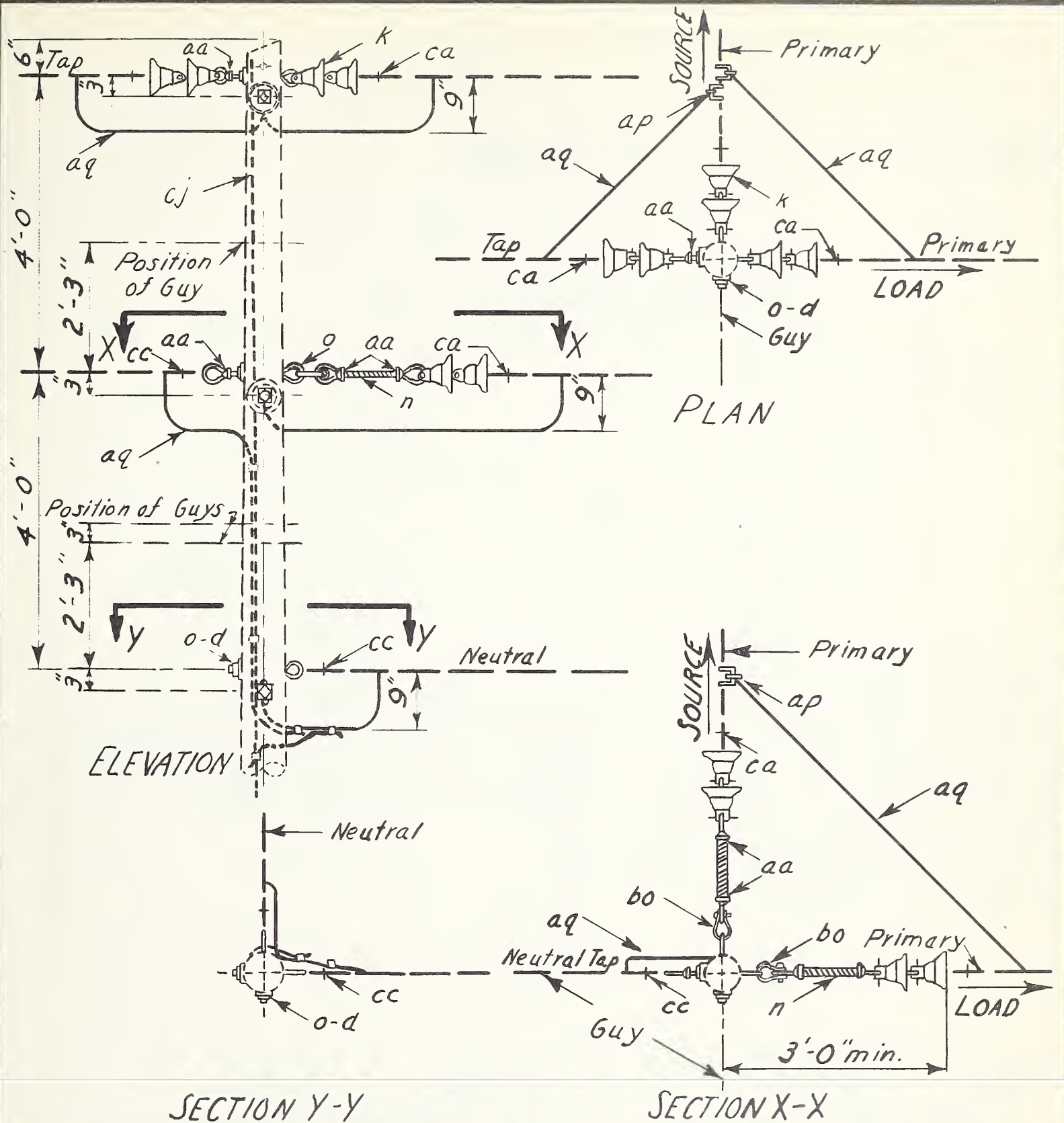
K.V. PRIMARY, TWO PHASE WIRES AND NEUTRAL  
VERTICAL CONSTR.—SINGLE-PHASE TAP AT 60° TO 90° ANGLE

Scale: 1/2"=1'-0"

Date:

1	Changed neutral tap	7-30-48
No.	REVISION	DATE:

B30R



ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
d	6	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	ap	3	Clamp, hot line, tap assembly
k	10	Insulator, suspension	aq		Jumpers
n	2	Bolt, double arming, 5/8" x req'd. lgth.	bo	2	Shackle, anchor
o	6	Bolt, eye 5/8" x req'd. length	ca	5	Deadend assembly, primary
p		Connectors, as req'd.	cc	3	Deadend assembly, neutral
aa	6	Nut, eye, 5/8"	cj	1	Ground wire assembly and rod

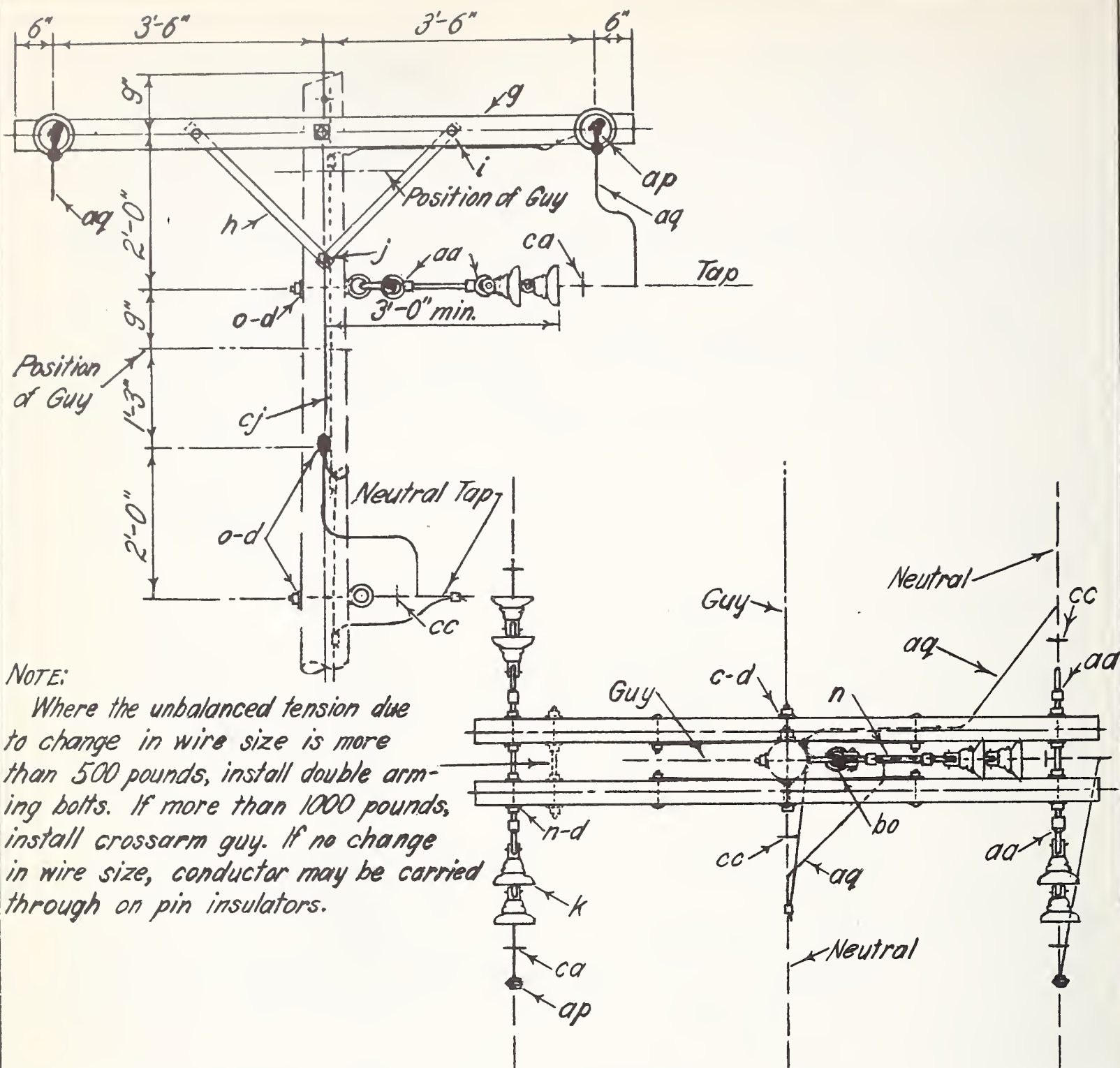
KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL  
VERTICAL CONSTR - SINGLE-PHASE TAP AT 60 TO 90° ANGLE

Scale: 1/2" = 1'-0"

Date: Mar. 24, 1949

No. REVISION DATE:

B30-1



ITEM	NO REQD.	MATERIAL	ITEM	NO REQD.	MATERIAL
c	1	Bolt, machine, $\frac{3}{8}$ " x req'd. length	o	3	Bolt, eye, $\frac{3}{8}$ " x req'd. length
d	13	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{1}{16}$ ", $\frac{1}{16}$ " hole	p		Connectors, as req'd.
g	2	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 8'-0"	aa	6	Nut, eye, $\frac{3}{8}$ "
h	4	Brace, flat, $1\frac{1}{4}$ " x $\frac{1}{4}$ " x 28"	ap	2	Clamp, hot line, tap assembly
i	4	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "	bo	1	Shackle, anchor
j	2	Screw, lag, $\frac{1}{2}$ " x 4"	ca	4	Deadend assembly, primary
k	8	Insulator, suspension	cc	3	Deadend assembly, neutral
n	3	Bolt, double arming, $\frac{3}{8}$ " x req'd. lgth.	cj		Ground wire assembly and rod
aq		Jumpers			

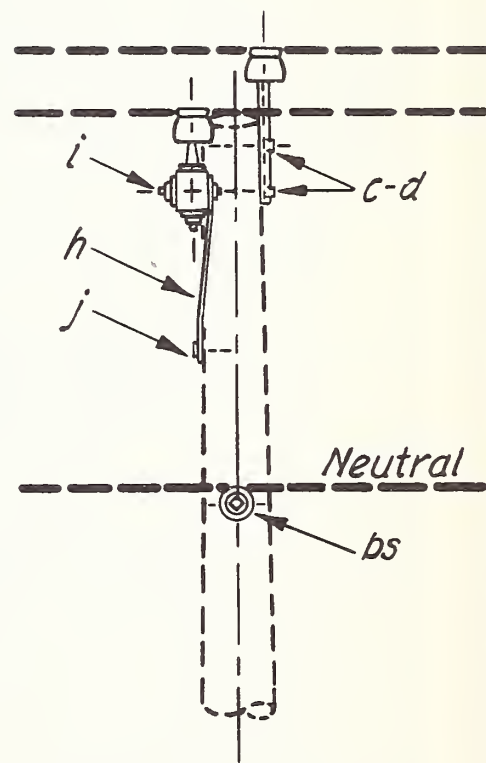
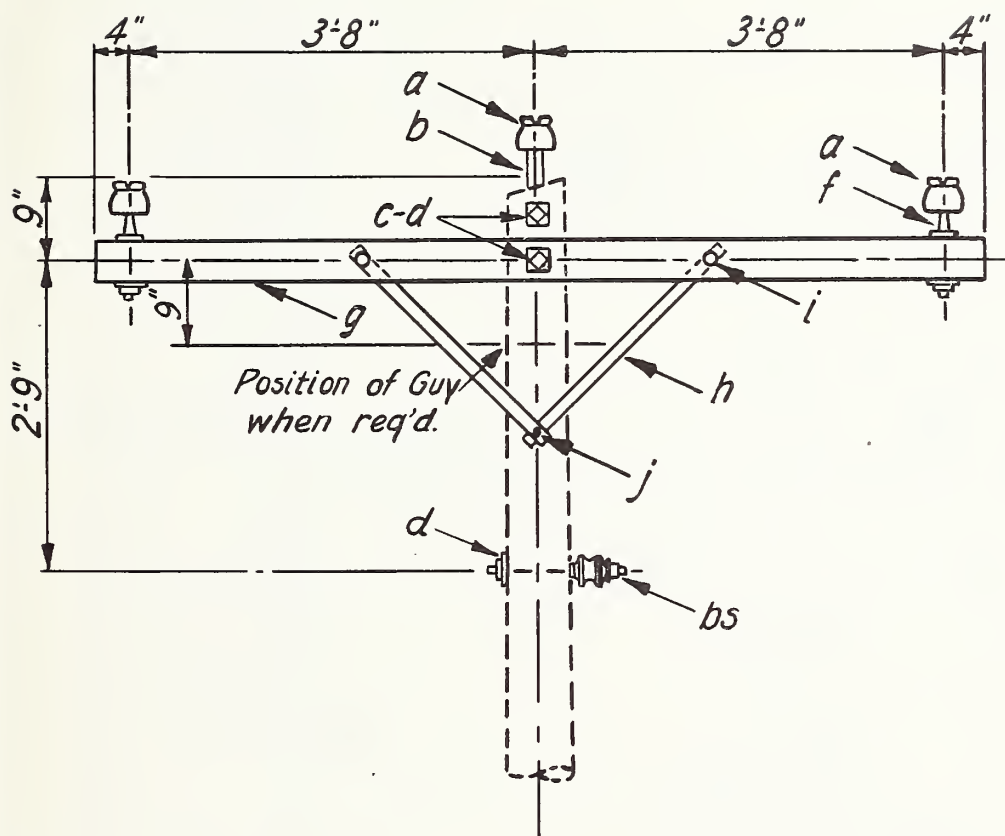
KV. PRIMARY, TWO PHASE WIRES AND NEUTRAL  
CROSSARM CONSTRUCTION-1-PHASE CONTINUING

Scale:  $\frac{1}{2}$ " = 1'-0"

Date: Jan. 31, 1949

NO REVISION DATE

B 41 R



ITEM	No. REQD.	MATERIAL	ITEM	No. REQD.	MATERIAL
a	3	Insulator, pin type	g	1	Crossarm, 3 1/2" x 4 1/2" x 8'-0"
b	1	Pin, pole top, 15"	h	2	Brace, 1/4" x 1/4" x 28"
c	2	Bolt, machine, 5/8" x req'd. length	i	2	Bolt, carriage, 3/8" x 4 1/2"
d	3	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	j	1	Screw, lag, 1/2" x 4"
bs	1	Bolt, single upset, insulated			
f	2	Pin, crossarm, steel, 5/8" x 10 3/4"			

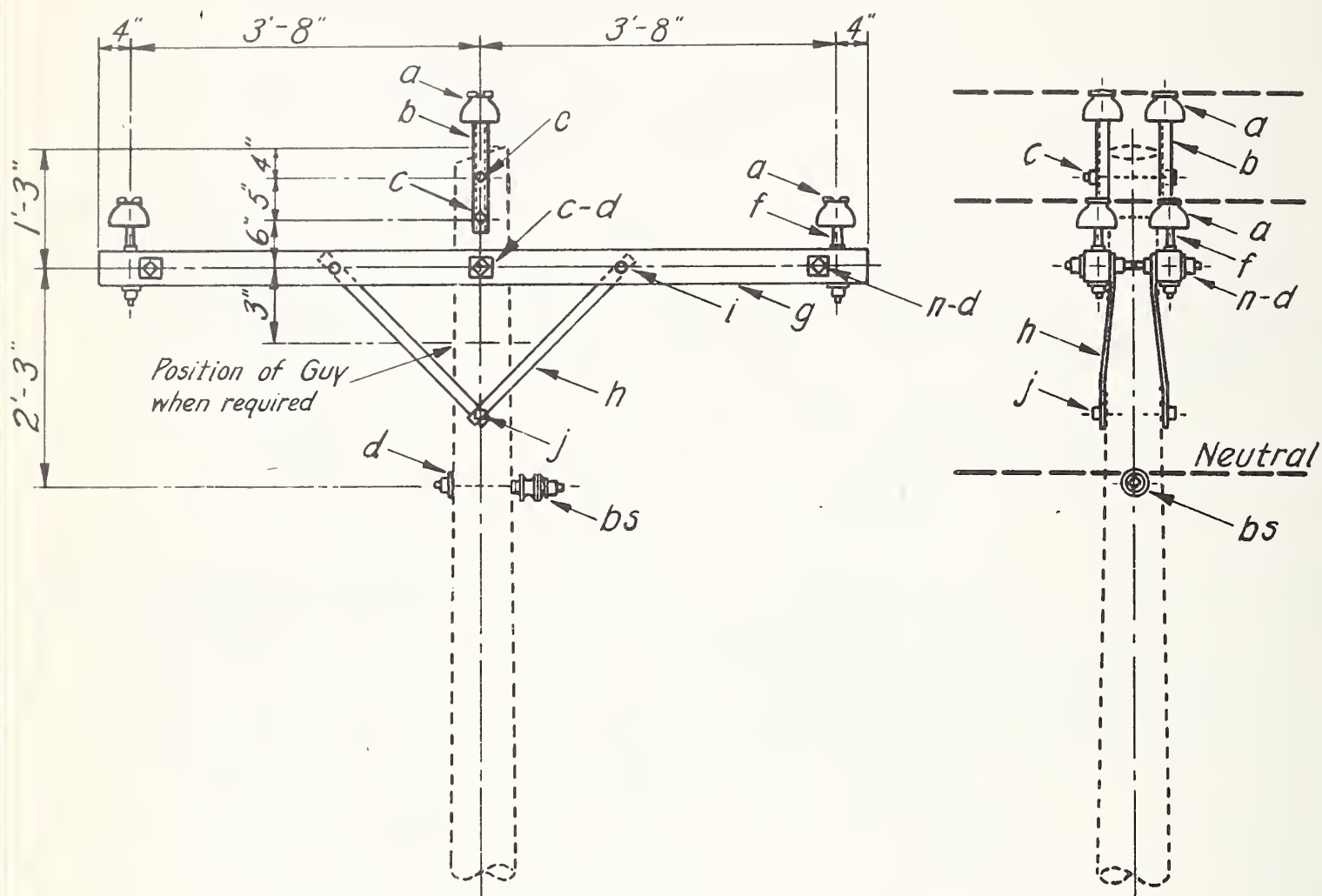
.....KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTR.-SINGLE PRIMARY SUPPORT AT 0° TO 5° ANGLE

Scale: 1/2" = 1'-0"

Date:

No. REVISION DATE:

C1



ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
a	6	Insulator, pin type	h	4	Brace, 1 1/4" x 1/4" x 28"
b	2	Pin, pole top, 15"	i	4	Bolt, carriage, 9/8" x 4 1/2"
c	3	Bolt, machine, 5/8" x req'd. length	j	2	Screw, lag, 1/2" x 4"
d	11	Washer, 2 1/4" x 2 1/4" x 3/16", 3/16" hole	n	2	Bolt, double arming, 5/8" req'd. length
f	4	Pin, crossarm, steel, 5/8" x 10 3/4"	bs	1	Bolt, single upset, insulated
g	2	Crossarm, 3 1/2" x 4 1/2" x 8'-0"			

.....KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTR.-DOUBLE PRIMARY SUPPORT AT 0° TO 5° ANGLE

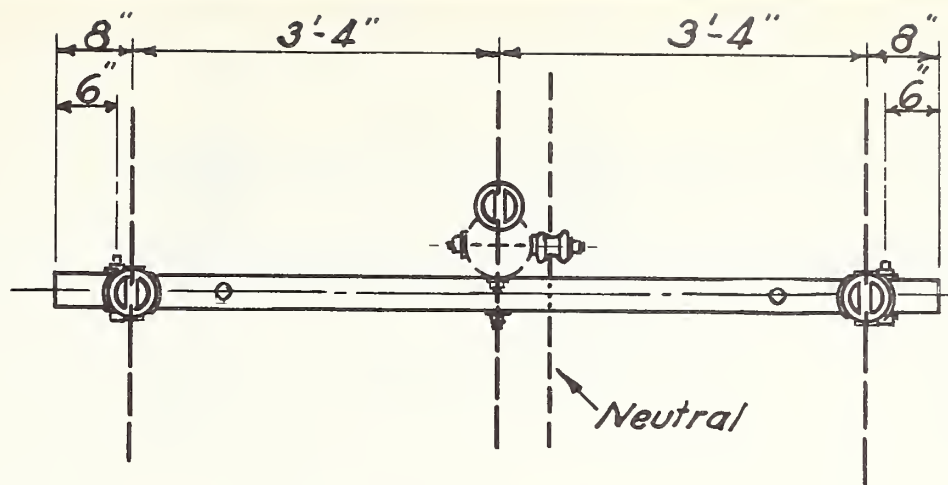
Scale: 1/2" = 1'-0"

Date:

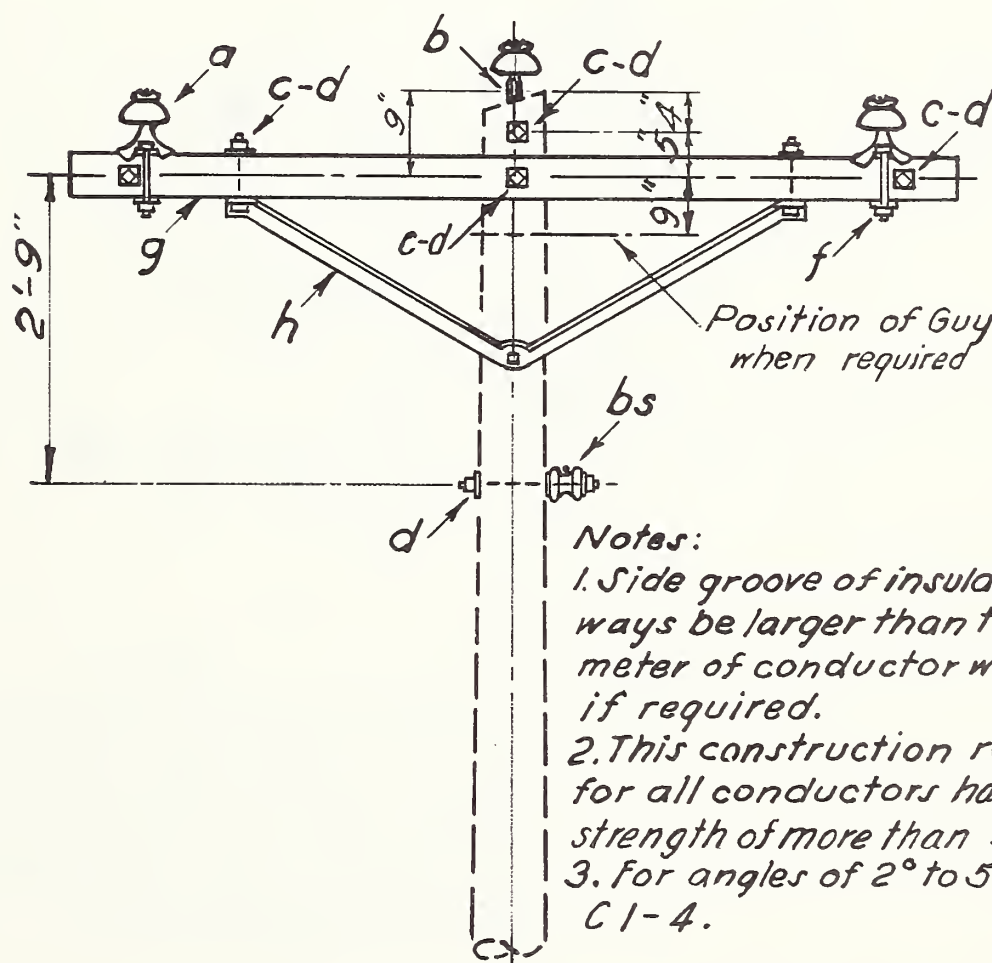
NO. REVISION

DATE:

C1-1



PLAN



Notes:

1. Side groove of insulator should always be larger than the overall diameter of conductor with armor rods, if required.
2. This construction recommended for all conductors having a breaking strength of more than 4,500 pounds.
3. For angles of 2° to 5° refer to drawing C1-4.

ITEM	No.	MATERIAL	ITEM	No.	MATERIAL
a	3	Insulator, pin type	g	1	Crossarm, 3 3/4 x 4 3/4 x 8'-0"
b	1	Pin, pole top, 15"	h	1	Brace, 1 1/2 x 1 1/2 x 3/16, 60" span
c	5	Bolt, machine, 5/8 x regd. lgth	bs	1	Bolt, single upset, insulated
d	8	Washer, 2 1/4 x 2 1/4 x 3/16, 13/16 hole	c	2	Bolt, machine, 1/2 x regd. lgth
f	2	Pin, crossarm, clamp type	d	2	Washer, rd. 1 3/8 diam, 9/16 hole

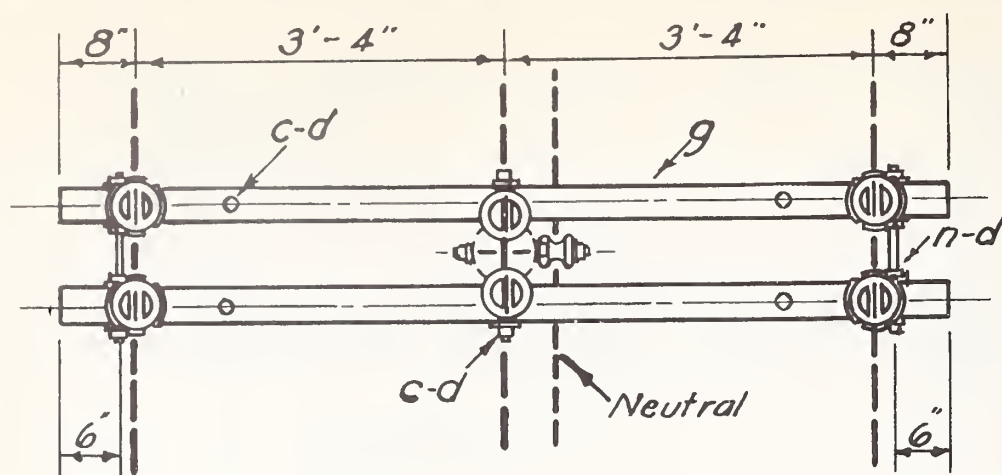
---KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTRUCTION 0° TO 2° ANGLE  
(LARGE CONDUCTORS)

Scale: 1/2" = 1'-0"

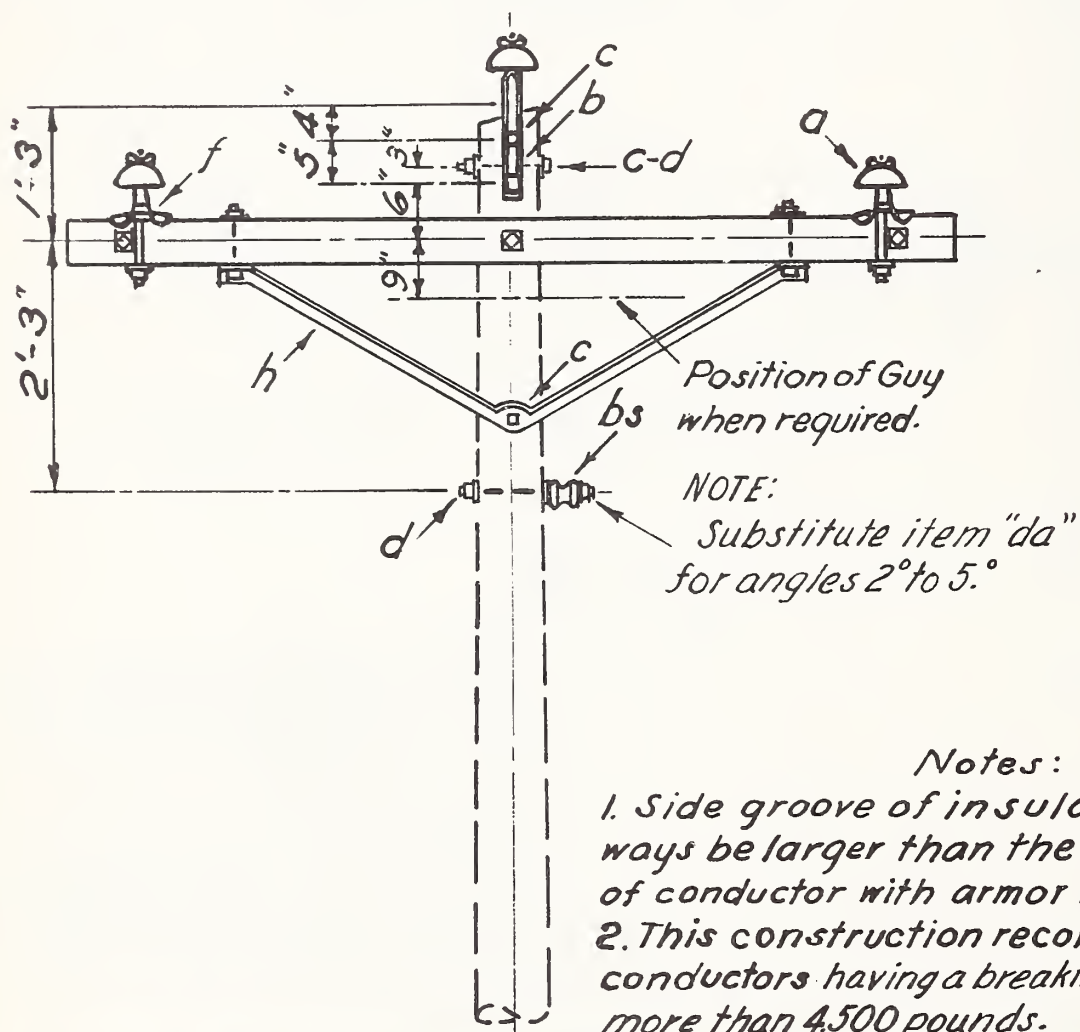
Date: Mar. 18, 1947

No. REVISION DATE

C1-2



PLAN



Notes:

1. Side groove of insulator should always be larger than the overall diameter of conductor with armor rods, if required.
2. This construction recommended for all conductors having a breaking strength of more than 4,500 pounds.

ITEM	No. REQD	MATERIAL	ITEM	No. REQD	MATERIAL
a	6	Insulator, pin type	f	4	Pin, crossarm, steel, clamp type
b	2	Pin, pole top, 15"	g	2	Crossarm, 3 3/4 x 4 3/4 x 8'-0" lg.
c	5	Bolt, machine, 5/8 x reqd. length	h	2	Brace, angle, 1 1/2 x 1 1/2 x 3/16, 60" sp.
c	4	Bolt, machine, 1/2 x reqd. length	n	2	Bolt, double arming, 5/8 x reqd. length
d	13	Washer, 2 1/4 x 2 1/4 x 3/16, 13/16 hole	bs	1	Bolt, single upset, insulated
d	4	Washer, rd., 1 3/8 diam, 9/16 hole			

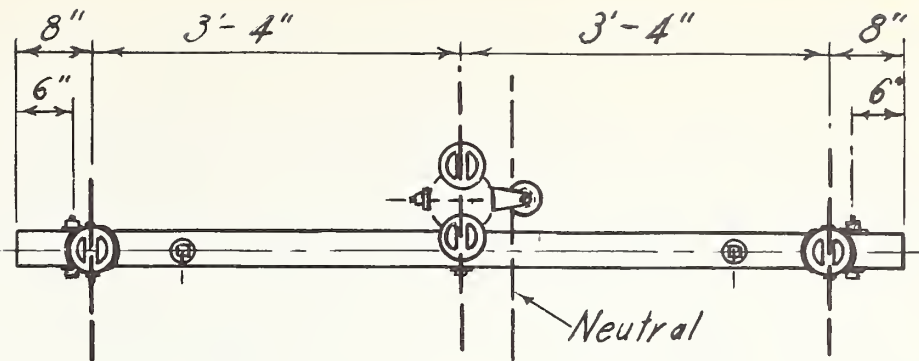
--- KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTRUCTION, DOUBLE PRIMARY SUPPORT, 0° TO 5° ANG.  
(LARGE CONDUCTORS)

Scale: 1/2" = 1'-0"

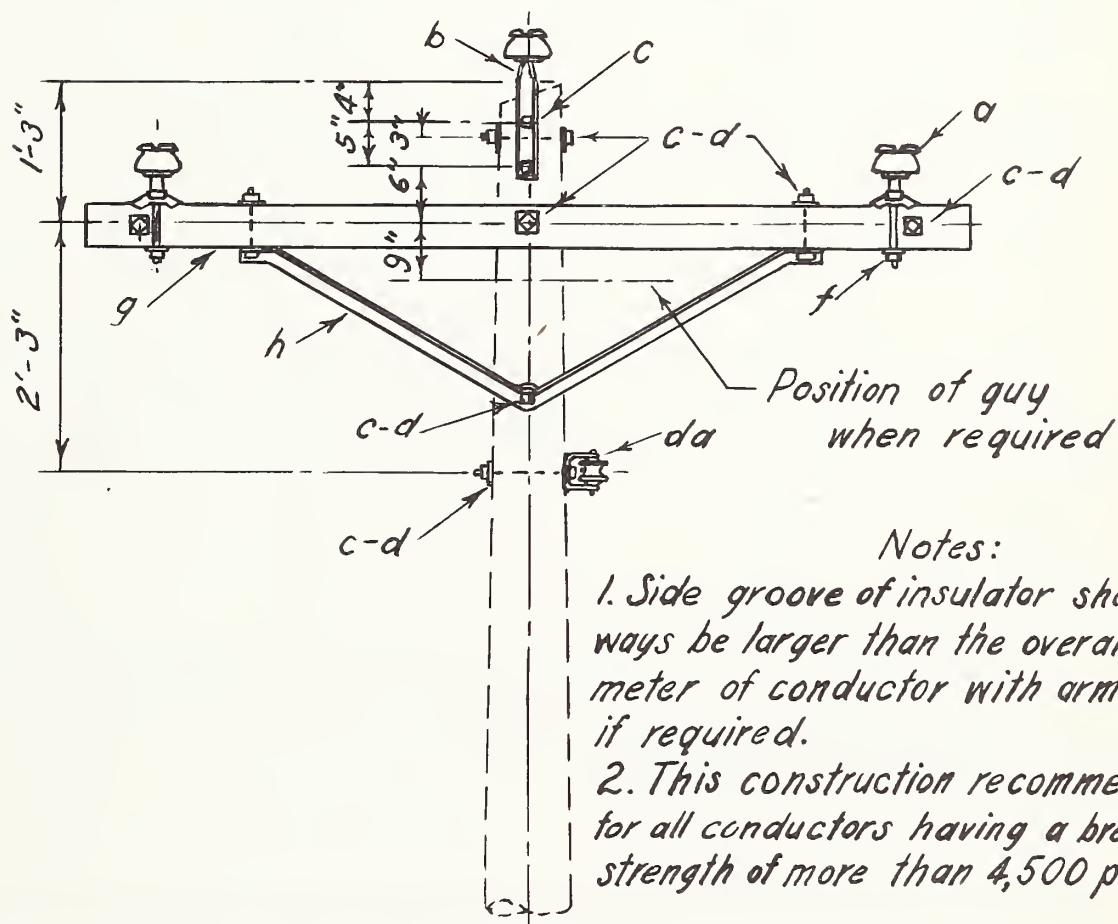
Date: Mar. 20, 1947

No. REVISION DATE

C1-3



PLAN



Notes:

1. Side groove of insulator should always be larger than the overall diameter of conductor with armor rods, if required.
2. This construction recommended for all conductors having a breaking strength of more than 4,500 pounds.

ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
a	4	Insulator, pin type	g	1	Crossarm, 3 3/4 x 4 3/4 x 8'-0"
b	2	Pin, pole top, 15"	h	1	Brace, 1 1/2 x 1 1/2 x 3/16, 60" span
c	8	Bolt, machine, 5/8" x reg'd. length	da	1	Bracket, insulated
d	10	Washer, 2 1/4 x 2 1/4 x 3/16, 13/16" hole	c	2	Bolt, machine, 1/2" x reg'd. length
f	2	Pin, crossarm, clamp type	d	2	Washer, rd., 1 3/8" diam., 3/8" hole

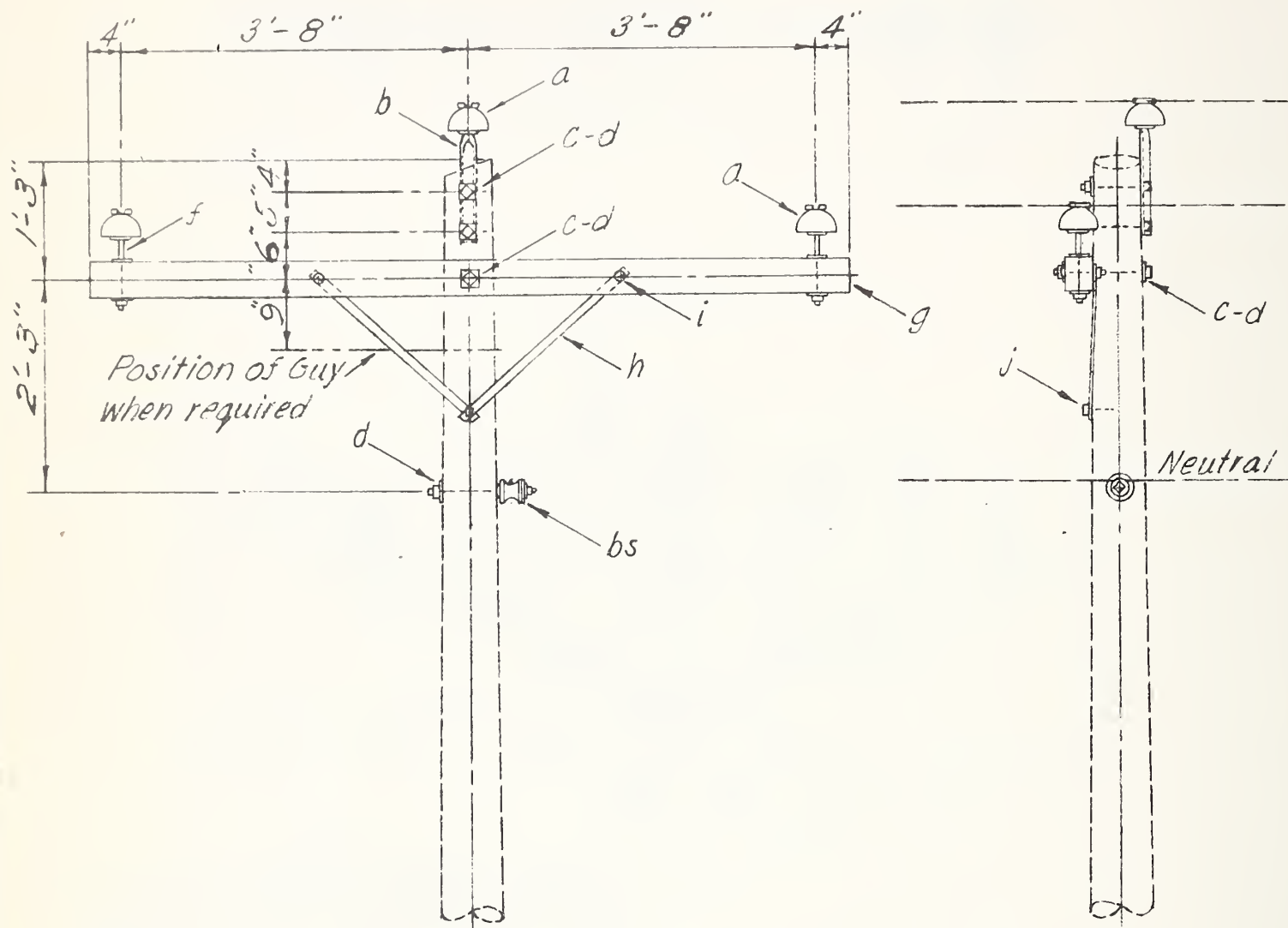
\_\_\_KV. PRIMARY, 3-PHASE, 4-WIRE STAR  
CROSSARM CONSTRUCTION-2° TO 5° ANGLE  
(LARGE CONDUCTORS)

Scale: 1/2" = 1'-0"

Date: Dec. 29, 1948

No. REVISION DATE

C1-4



**NOTE:**

This assembly may be used for conversion units when considered applicable.

ITEM	NO. REQD.	MATERIAL	ITEM	NO. REQD.	MATERIAL
a	3	Insulator, pin type	h	2	Brace, flat, 1/4" x 1/4" x 28"
b	1	Pin, pole top, 15"	i	2	Bolt, carriage, 3/8" x 4 1/2"
c	3	Bolt, machine, 3/8" x reqd. length	j	1	Screw, lag, 1/2" x 4"
d	5	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	bs	1	Bolt, single upset, insulated
f	2	Pin, crossarm, steel, 3/8" x 10 3/4"			
g	1	Crossarm, 3 1/2" x 4 1/2" x 8'-0"			

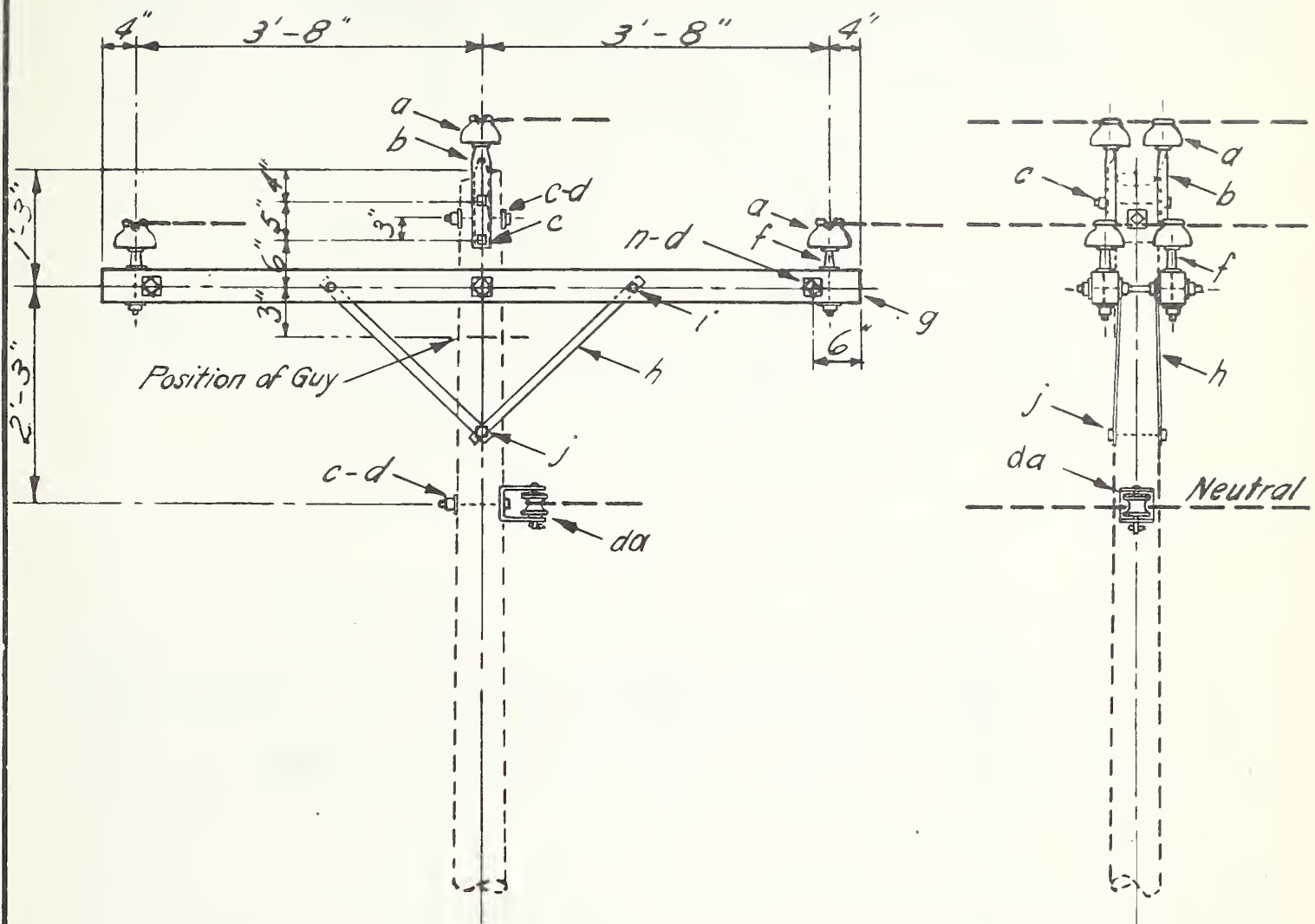
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTR.-SINGLE PRIMARY SUPPORT AT 0° TO 5° ANGLE

Scale: 1/2" = 1'-0"

Date: Mar. 2, 1950

1	Changed guy position	4-25-50
NO.	REVISION	DATE:

C1-7

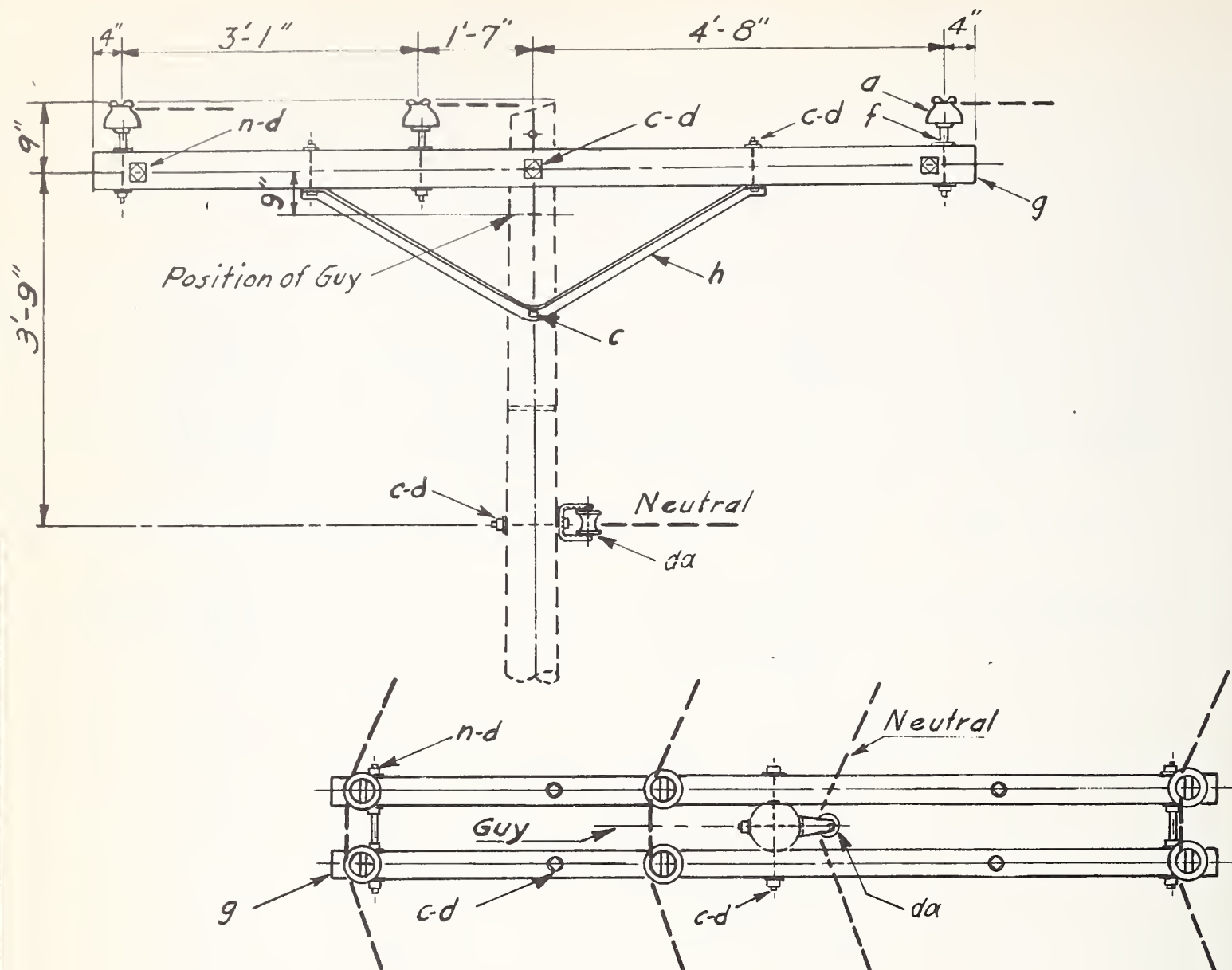


NOTE:- When the transverse load is more than 500 pounds per pin, substitute C2-1 or C2-2 as required.

ITEM	Nº REQD	MATERIAL	ITEM	Nº REQD	MATERIAL
a	6	Insulator, pin type	h	4	Brace, 1 1/4" x 1/4" x 28"
b	2	Pin, pole top, 15"	i	4	Bolt, carriage, 3/8" x 4 1/2"
c	5	Bolt, machine, 5/8" x req'd length	j	2	Screw, lag, 1/2" x 4"
d	13	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	n	2	Bolt, double arming, 5/8" x req'd length
f	4	Pin, crossarm, steel, 5/8" x 10 3/4"	da	1	Bracket, insulated
g	2	Crossarm, 3 1/2" x 4 1/2" x 8'-0"			

KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTR-DOUBLE PRIMARY SUPPORT AT 5° TO 30° ANGLE

1	Added note on trans. load	6/30/47	Scale: 1/2" = 1'-0"	Date:
Nº	REVISION	DATE		C2R



## PLAN

NOTES: Center phase wire or neutral wire may be located on the opposite side of the pole where necessary to avoid crossing of wires in midspan. Neutral may also be mounted on the crossarm.

When the transverse load is more than 500 pounds per pin, install a  $2\frac{1}{4} \times 2\frac{1}{4} \times \frac{3}{16}$  washer on the top of the crossarm for each pin. If the load is more than 750 pounds, use construction shown on C2-2.

ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
a	6	Insulator, pin type	c	4	Bolt, machine $\frac{1}{2}$ " x req'd length
c	3	Bolt, machine $\frac{5}{8}$ " x req'd length	d	4	Washer, rd., $1\frac{3}{8}$ " diam, $\frac{9}{16}$ " hole
d	11	Washer, $2\frac{1}{4} \times 2\frac{1}{4} \times \frac{3}{16}$ , $\frac{13}{16}$ " hole	n	2	Bolt, double arming $\frac{5}{8}$ " x req'd length
f	6	Pin, crossarm, steel $\frac{5}{8}$ " x $10\frac{3}{4}$ "	da	1	Bracket, insulated
g	2	Crossarm $3\frac{3}{4} \times 4\frac{3}{4} \times 10'-0"$			
h	2	Brace, $1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16}$ Angle, 60" Span			

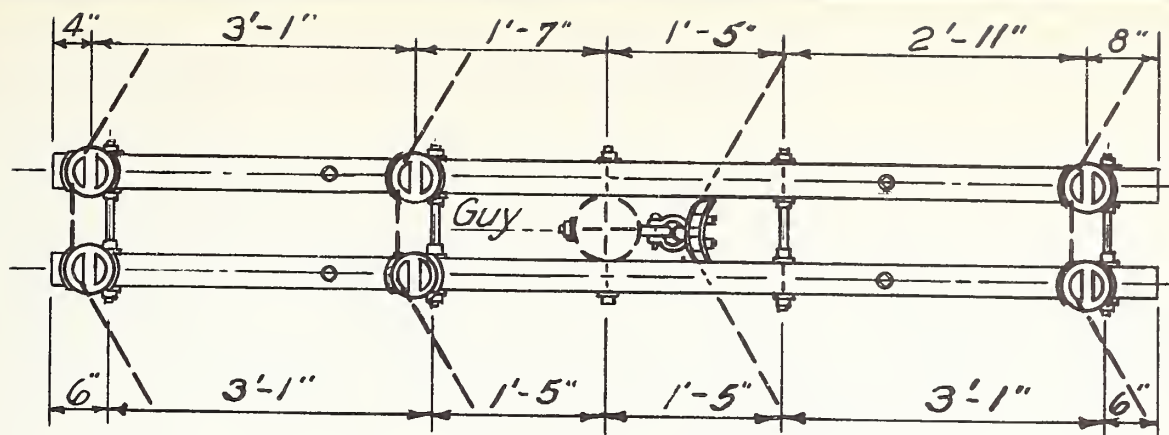
KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTRUCTION-5° TO 30° ANGLE

Scale:  $\frac{1}{2}$ " = 1'-0"

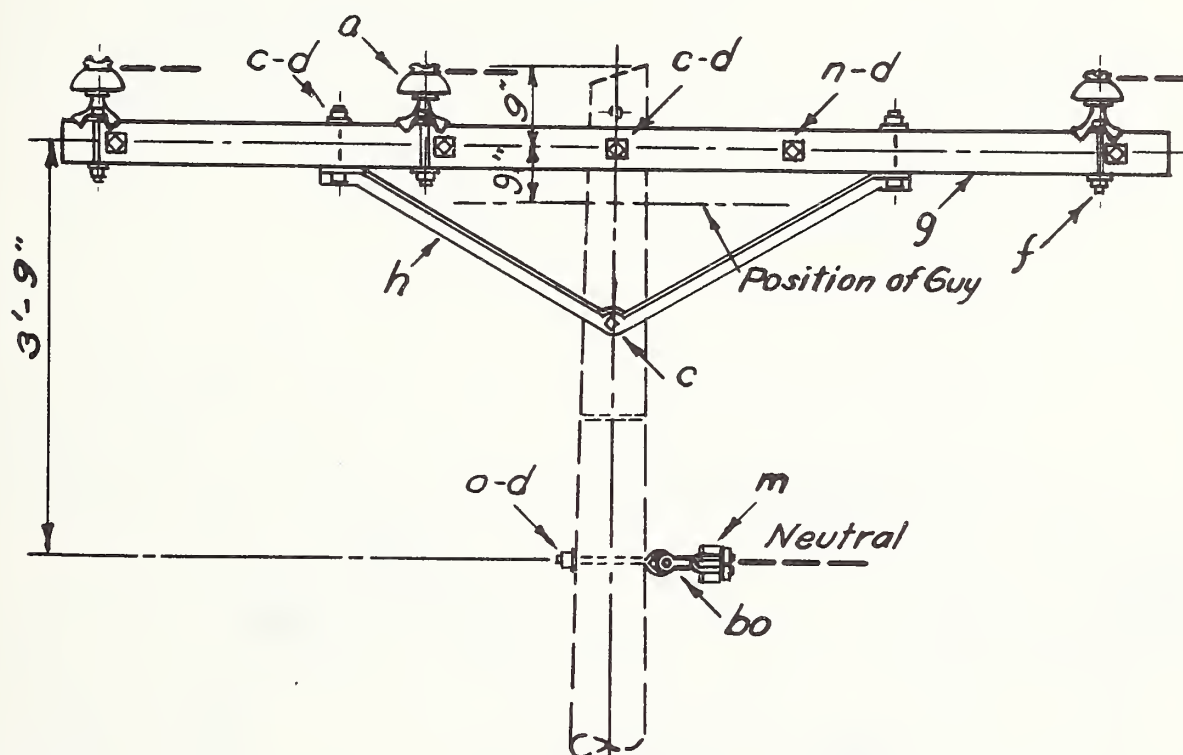
Date:

1	Added note - change mat'l list	6/30/47
No.	REVISION	DATE

C2-1R



PLAN



NOTES:

1. Side groove of insulator should always be larger than the overall diameter of conductor with armor rods, if required.
2. Center phase wire or neutral wire may be located on the opposite side of the pole where necessary to avoid crossing of wires in midspan.
3. If transverse load on insulator pins is more than 1500 pounds each, substitute "VERTICAL CONSTRUCTION" - 30° TO 60° ANGLE ASSEMBLY.
4. This construction recommended for all conductors having a breaking strength of more than 4,500 pounds.

ITEM	No. Req'd	MATERIAL	ITEM	No. Req'd	MATERIAL
a	6	Insulator, pin type	g	2	Crossarm, 3 3/4 x 4 3/4 x 10'-0"
c	2	Bolt, machine, 5/8 x req'd. lgth.	h	2	Brace, angle, 1 1/2 x 1 1/2 x 3/16, 60° sp.
c	4	Bolt, machine, 1/2 x req'd. lgth.	m	1	Clamp, suspension, 2 bolt
d	19	Washer, 2 1/4 x 2 1/4 x 3/16, 13/16 hole	n	4	Bolt, double arming, 5/8 x req'd. lgth.
d	4	Washer, rd, 1 3/8 diam, 9/16 hole	o	1	Bolt, eye, 5/8 x req'd. length
f	6	Pin, crossarm, steel, clamp type	bo	1	Shackle, anchor

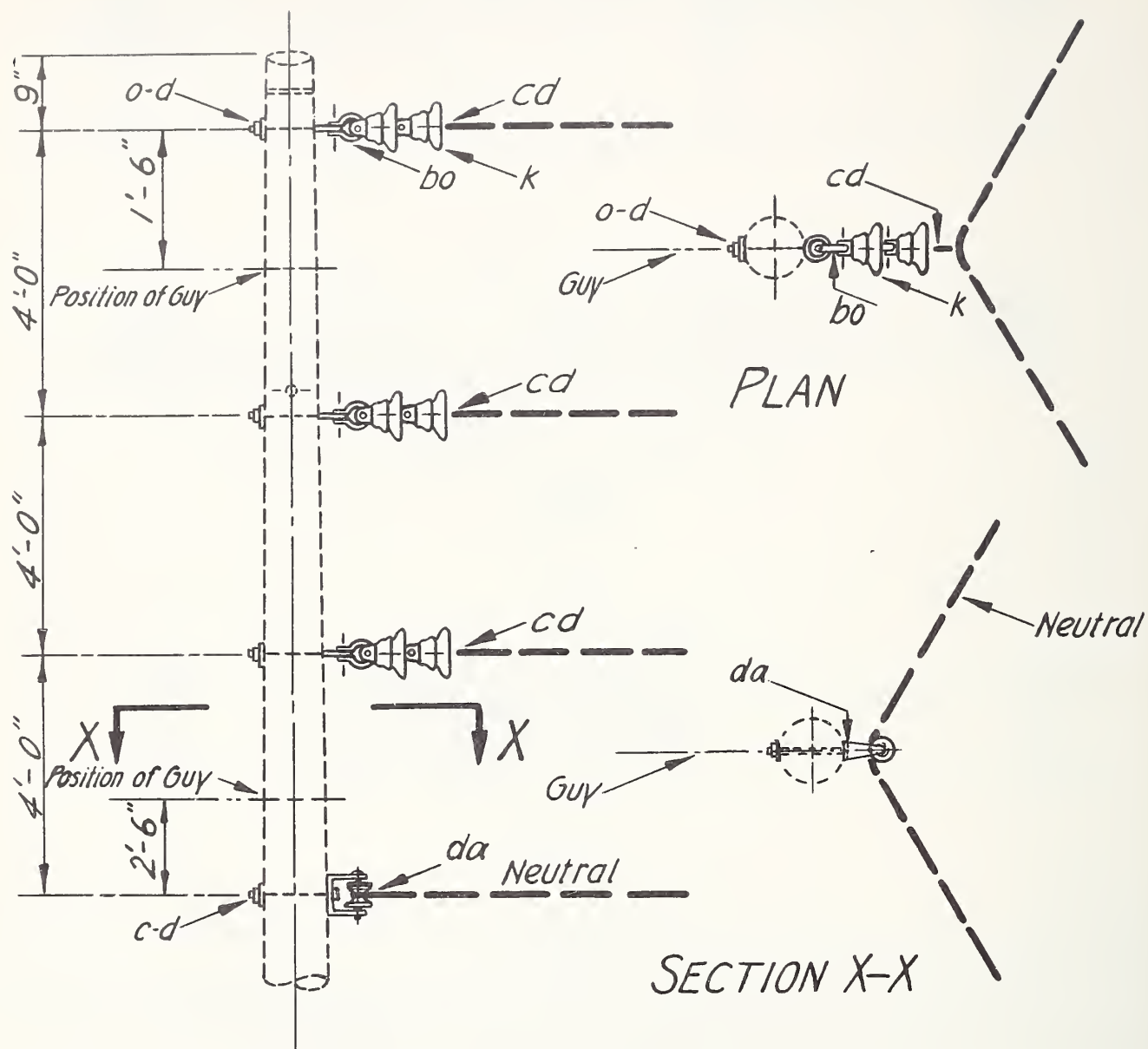
---KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTRUCTION, 5° TO 30° ANGLE  
(LARGE CONDUCTORS)

Scale: 1/2" = 1'-0"

Date:

1	Changed note # 4	11/9/48
No.	REVISION	DATE

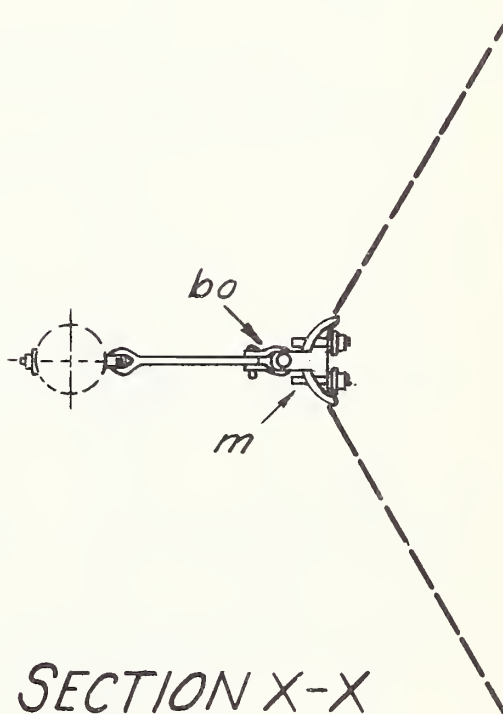
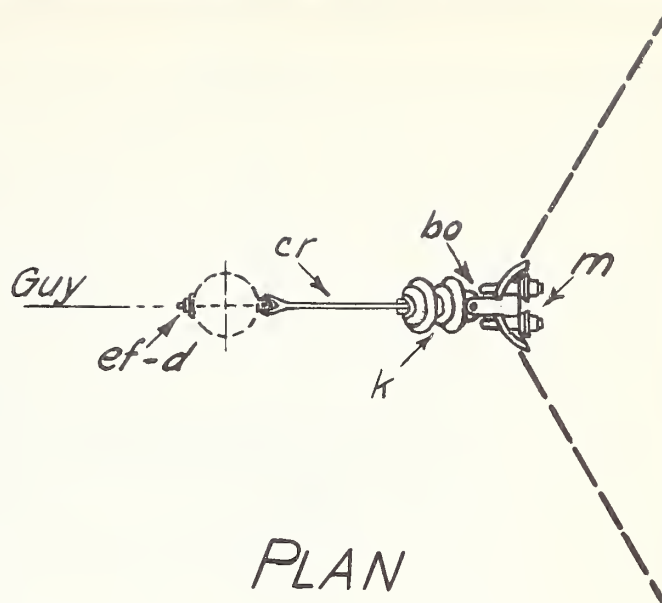
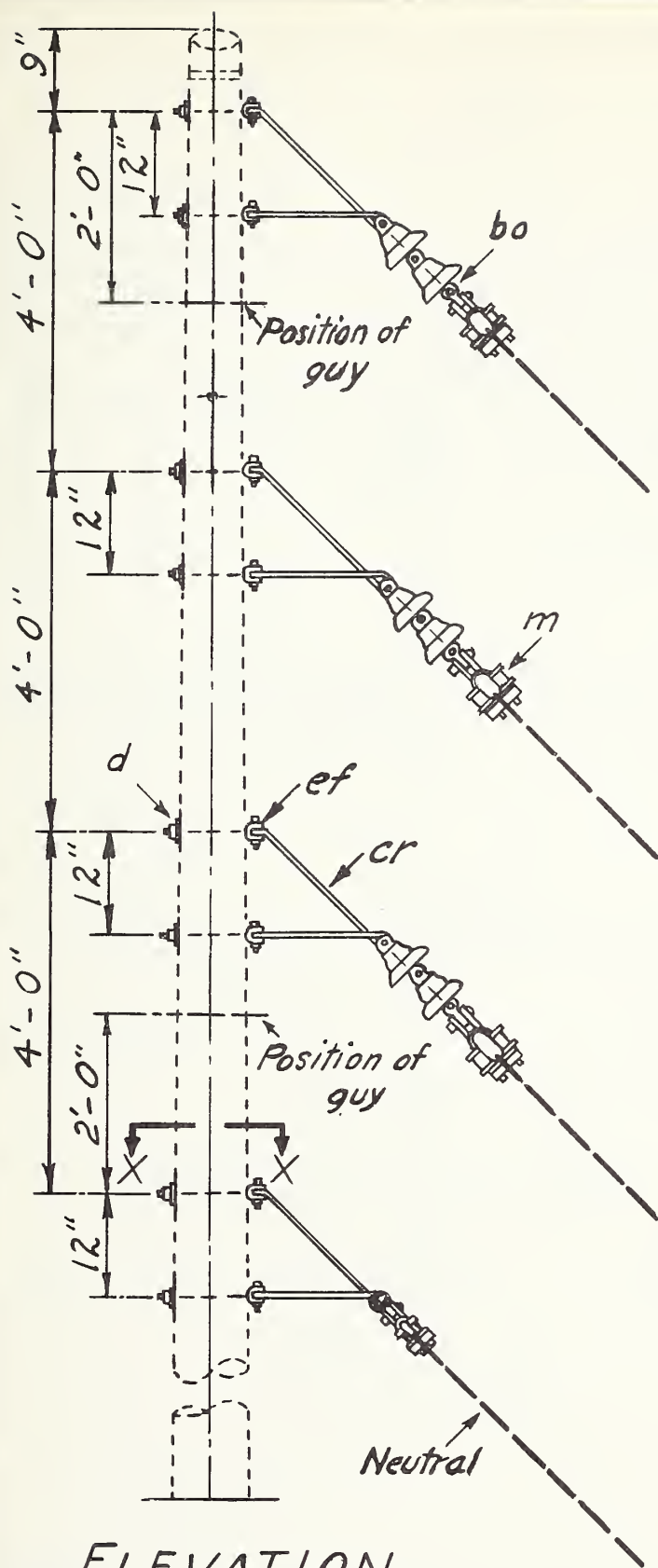
C2-2R



*This assembly may be used for angles 20° to 30° with all conductors having a breaking strength of 4500 pounds or more. For angles of 10° to 20° refer to Dwg. #C3-1.*

ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
d	4	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	cd	3	Angle assembly, primary
k	6	Insulator, suspension	da	1	Bracket, insulated
o	3	Bolt, eye, 5/8" x req'd. length	c	1	Bolt, machine, 5/8" x req'd. length
bo	3	Shackle, anchor			

		KV. PRIMARY, 3-PHASE 4-WIRE STAR VERTICAL CONSTRUCTION-30° TO 60° ANGLE	
1	Added note.	2/3/48	Scale: 1/2"=1'-0"
No	REVISION	Date	Date:
			C3R



Note:  
The arrangement indicated on drawing  
C3R may be used for 20° to 60° angles.

ITEM	No. REQD	MATERIAL	ITEM	No. REQD	MATERIAL
d	8	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	bo	4	Shackle, anchor
k	6	Insulator, suspension	ef	8	Bolt, clevis, 5/8" x req'd. lgth.
m	4	Clamp, suspension	cr	4	Bracket, angle, 5/8"

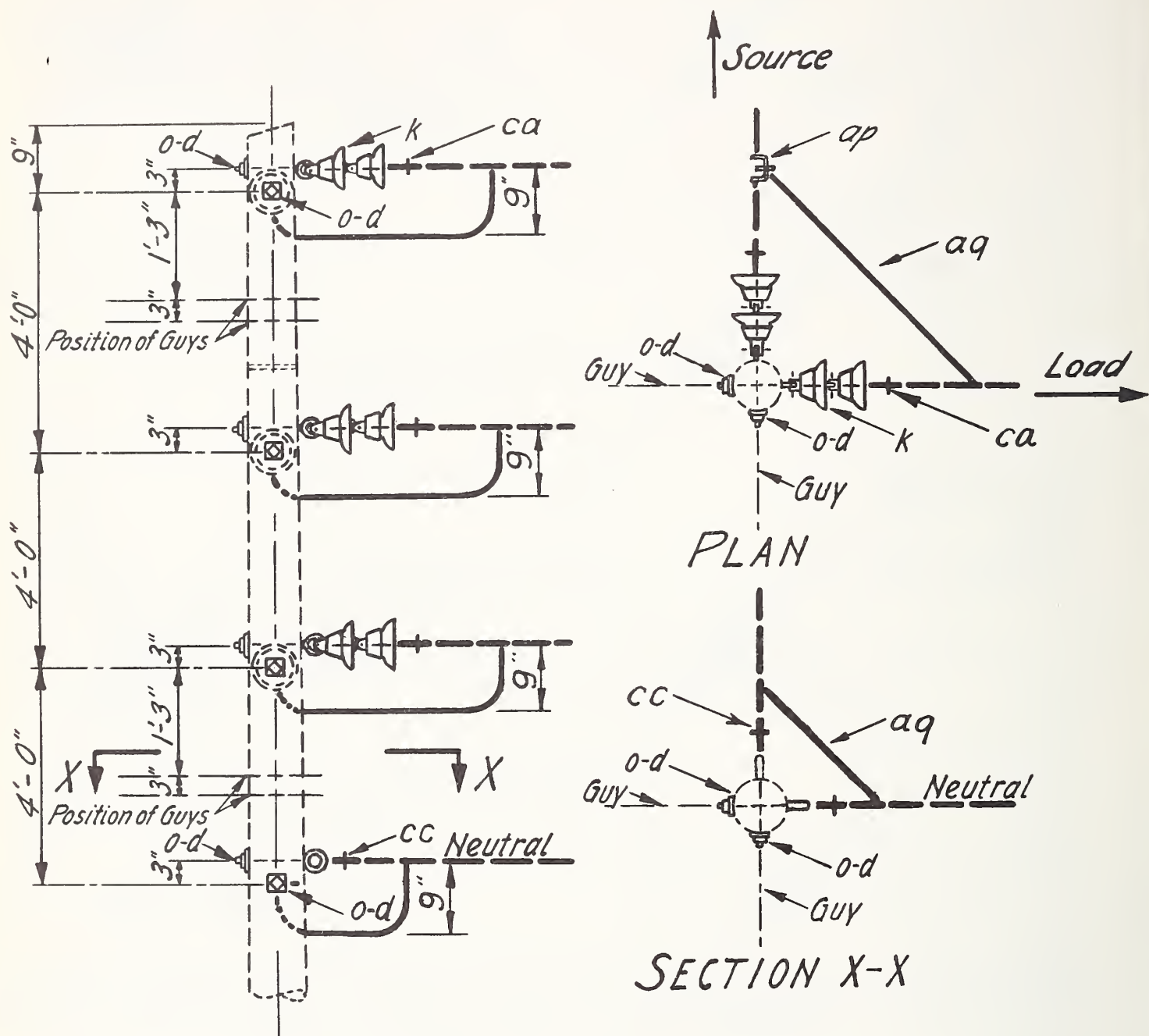
-----KV. PRIMARY, 3-PHASE 4-WIRE STAR  
VERTICAL CONSTRUCTION 10° TO 20° ANGLE  
(LARGE CONDUCTORS)

2	Changed guy positions	2-8-51
1	Changed size of angle bracket	8-8-50
No.	REVISION	DATE

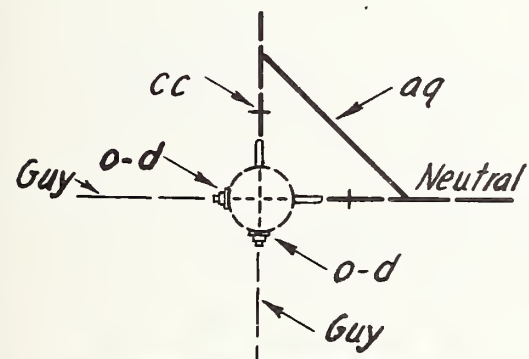
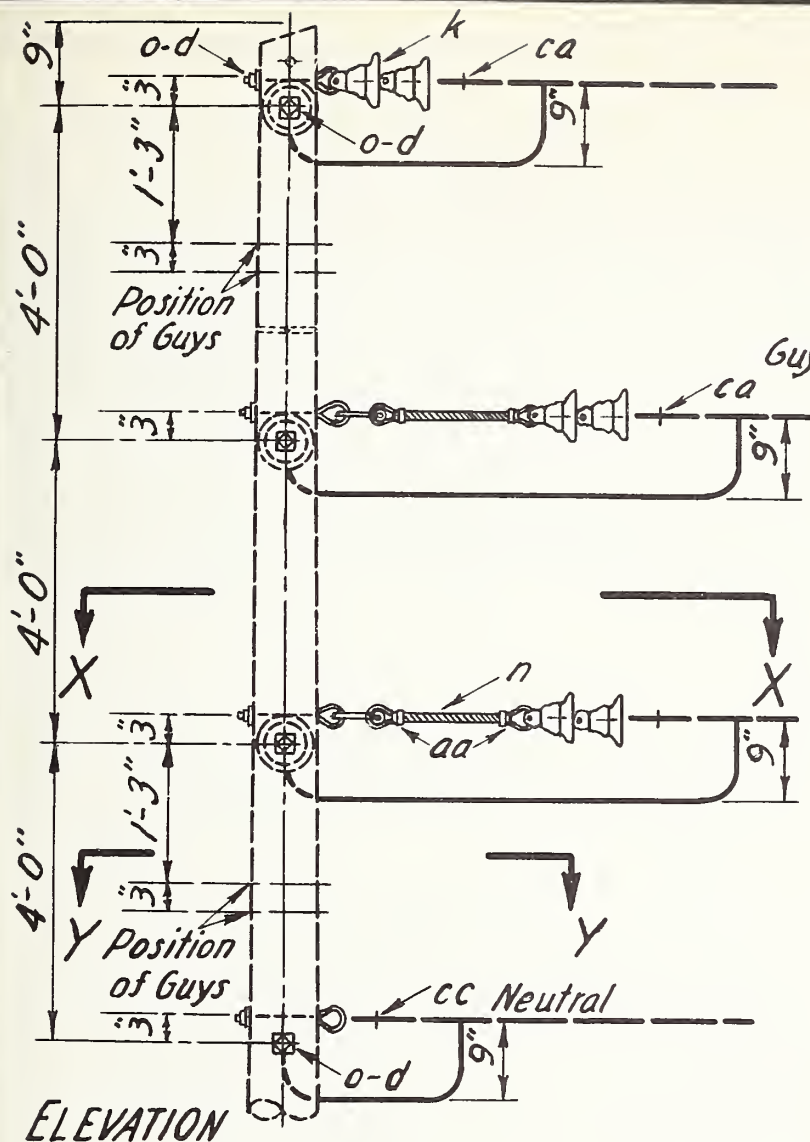
Scale: 3/8"=1'-0"

Date: Feb. 21, 1947

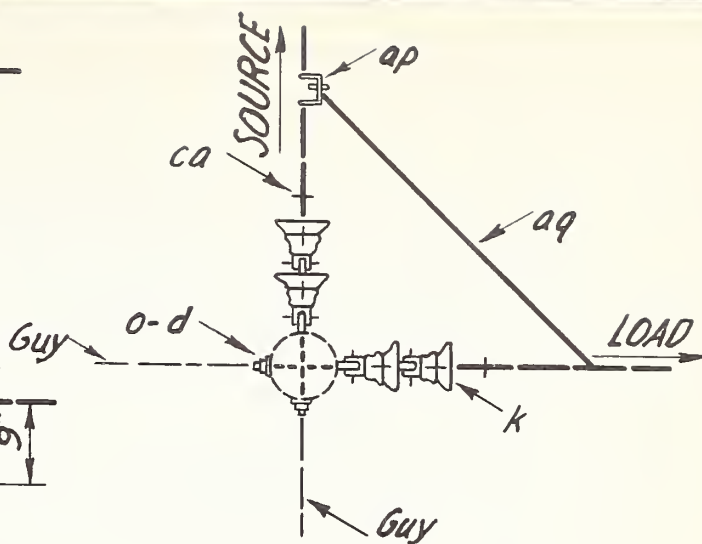
C 3-1R



ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
d	8	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	o	8	Bolt, eye, 5/8" req'd. length
k	12	Insulator, suspension	ca	6	Deadend assembly, primary
aq		Jumpers	cc	2	Deadend assembly, neutral
p		Connectors, as req'd.	KV. PRIMARY, 3-PHASE 4-WIRE STAR VERTICAL CONSTRUCTION - 60° TO 90° ANGLE Scale: 1/2" = 1'-0"		
ap	3	Clamp, hot line, tap assembly			
			Date:		
No.	REVISION	DATE:	C4		

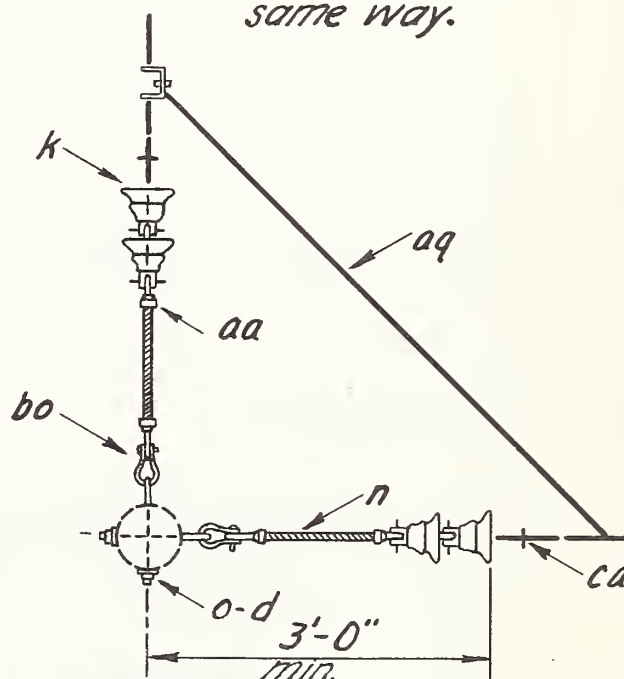


SECTION Y-Y



PLAN

Other similiar assemblies may be constructed in the same way.



SECTION X-X

ITEM	NO. REQ'D.	MATERIAL	ITEM	NO. REQ'D.	MATERIAL
d	8	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	ap	3	Clamp, hot line, tap assembly
k	12	Insulator, suspension	aq		Jumpers
n	4	Bolt, double arming, 5/8" x req'd. lgth.	bo	4	Shackle, anchor
o	8	Bolt, eye, 5/8" x required length	ca	6	Deadend assembly, primary
p		Connectors, as required	cc	2	Deadend assembly, neutral
aa	8	Nut, eye 5/8"			

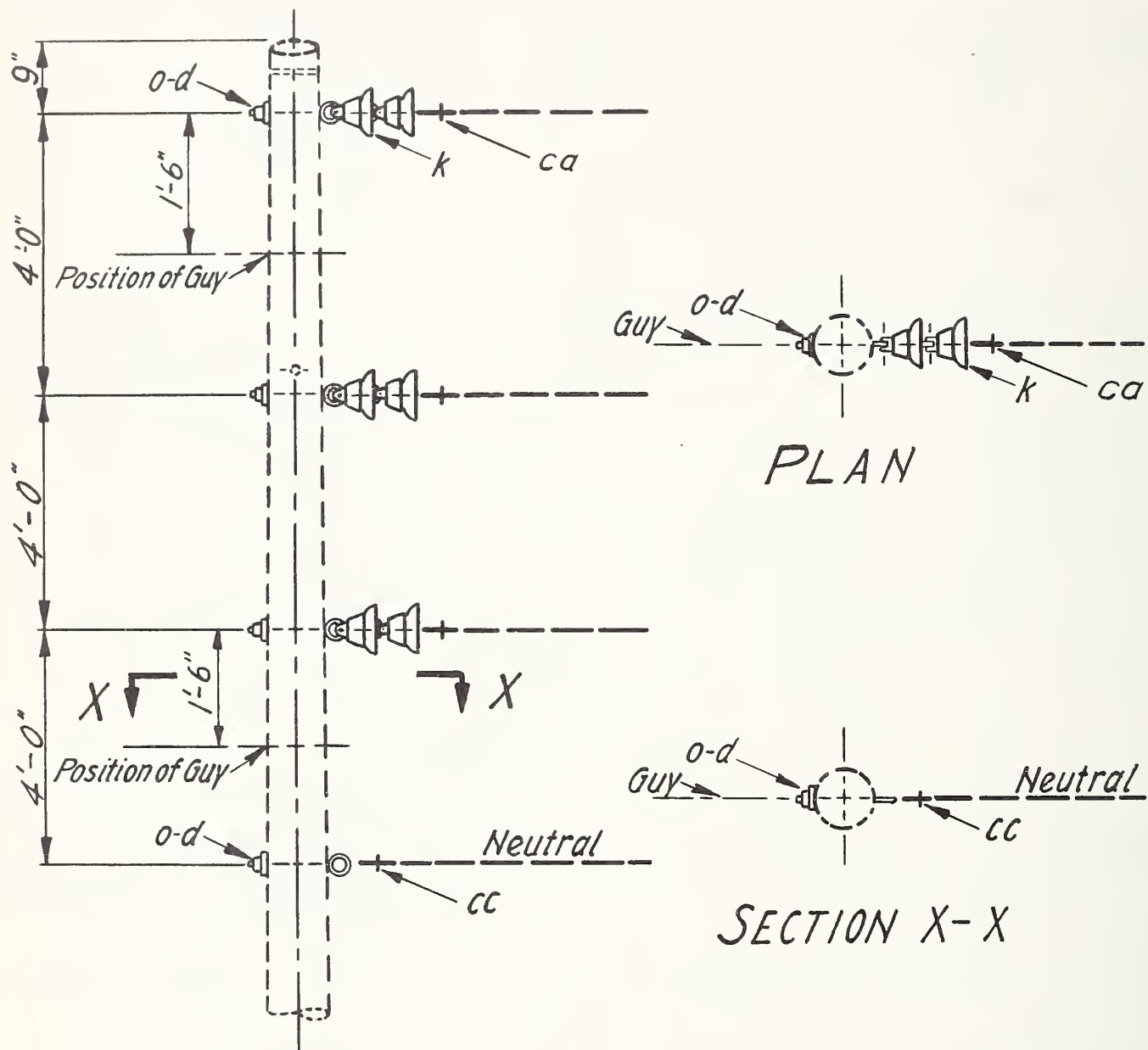
KV. PRIMARY, 3-PHASE 4-WIRE STAR  
VERTICAL CONSTRUCTION-60 TO 90° ANGLE

Scale: 1/2" = 1'-0"

Date: June 17, 1948

NO. REVISION Date

C4-1



ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
d	4	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	o	4	Bolt, eye, 5/8" req'd. length
k	6	Insulator, suspension	cc	1	Dead end assembly, neutral
ca	3	Dead end assembly, primary			

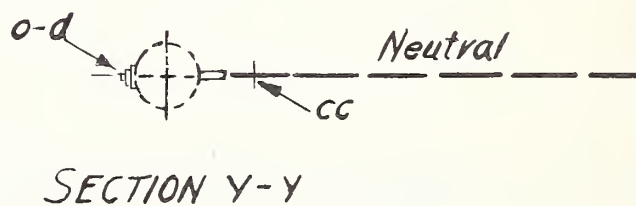
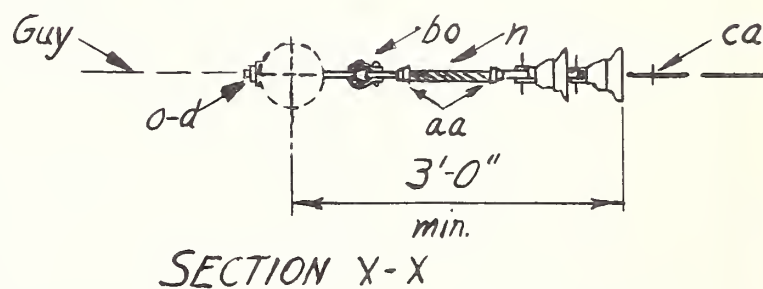
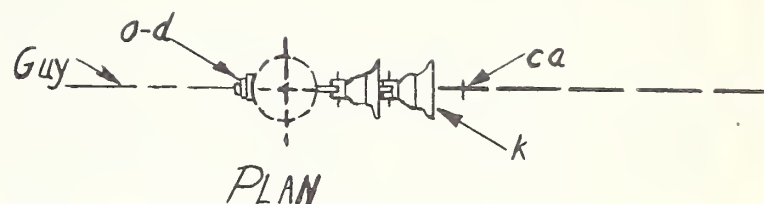
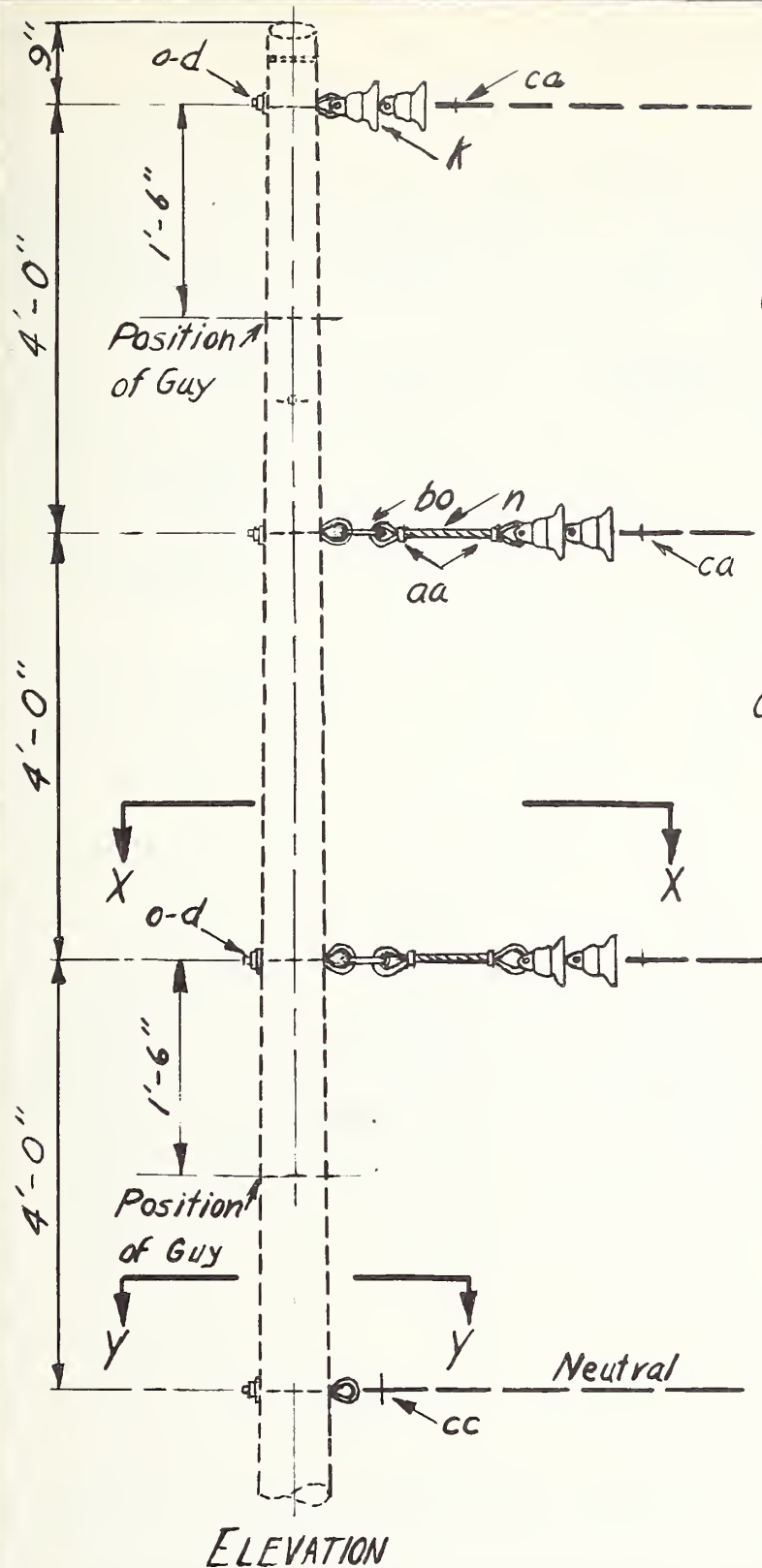
-----KV. PRIMARY, 3-PHASE 4-WIRE STAR  
VERTICAL CONSTRUCTION-DEAD END(SINGLE)

Scale: 1/2"=1'-0"

Date:

NO. REVISION DATE:

C5



ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
d	4	Washer, 2 1/4" x 2 1/4" x 3/16" x 13/16" hole	bo	2	Shackle, anchor
k	6	Insulator, suspension	ca	3	Deadend assembly, primary
h	2	Bolt, double arming, 5/8" x req'd lgth	cc	1	Deadend assembly, neutral
o	4	Bolt, eye, 5/8" x required length			
aa	4	Nut, eye 5/8"			

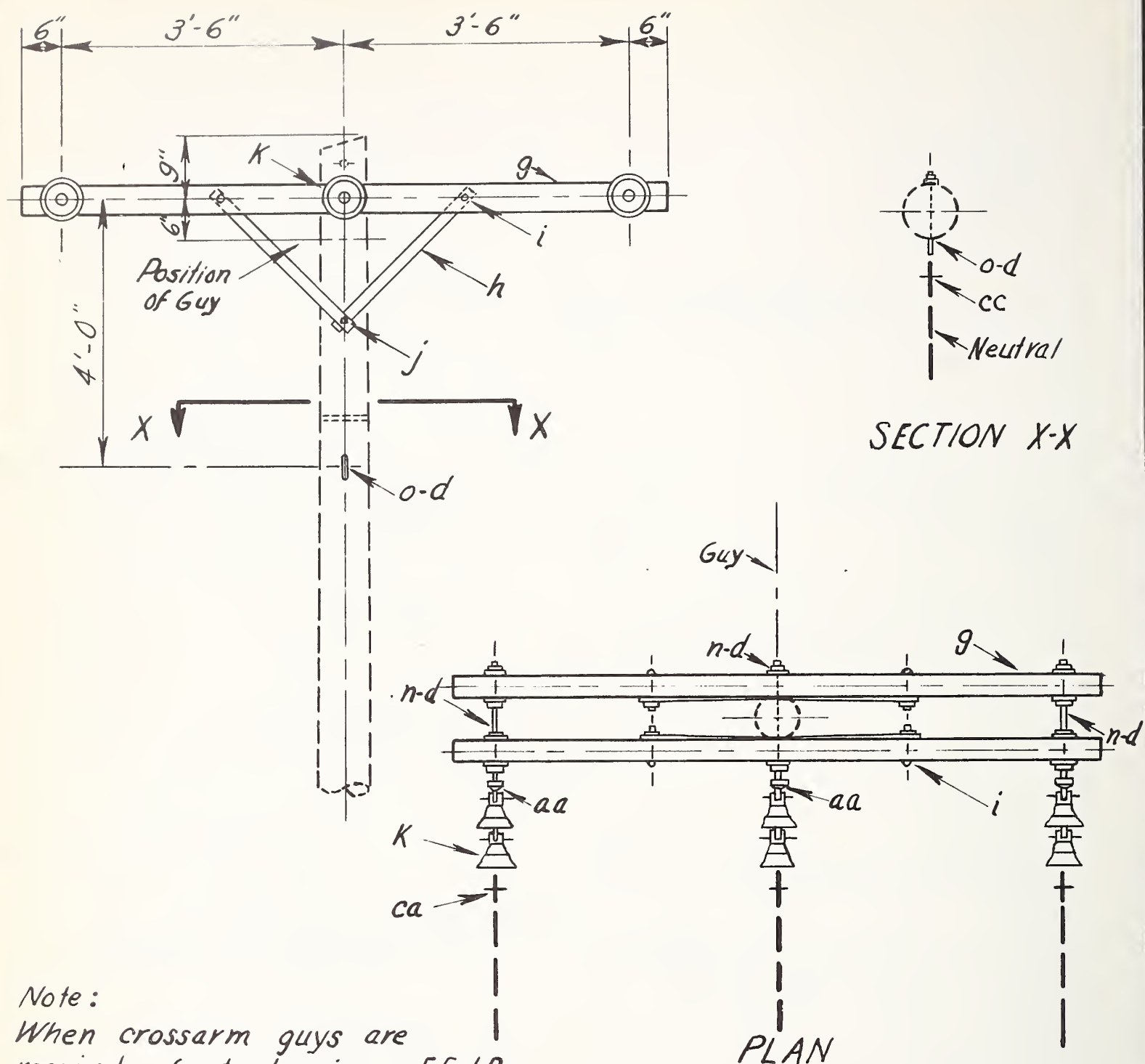
KV. PRIMARY, 3-PHASE 4-WIRE STAR  
VERTICAL CONSTRUCTION - DEADEND (SINGLE)

Scale: 1/2" = 1'-0"

Date: Mar. 4, 1949

No. REVISION DATE

C5-1



ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
d	11	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	n	3	Bolt, double arming, 5/8" x req'd. length
g	2	Crossarm, 3 1/2" x 4 1/2" x 8'-0"	o	1	Bolt, eye, 5/8" x req'd. length
h	4	Brace, 1 1/4" x 1/4" x 28"	aa	3	Nut, eye, 5/8"
i	4	Bolt, carriage, 3/8" x 4 1/2"	ca	3	Deadend assembly, Primary
j	2	Screw, lag, 1/2" x 4"	cc	1	Deadend assembly, Neutral
K	6	Insulator, suspension			

KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTRUCTION- DEAD END (SINGLE)

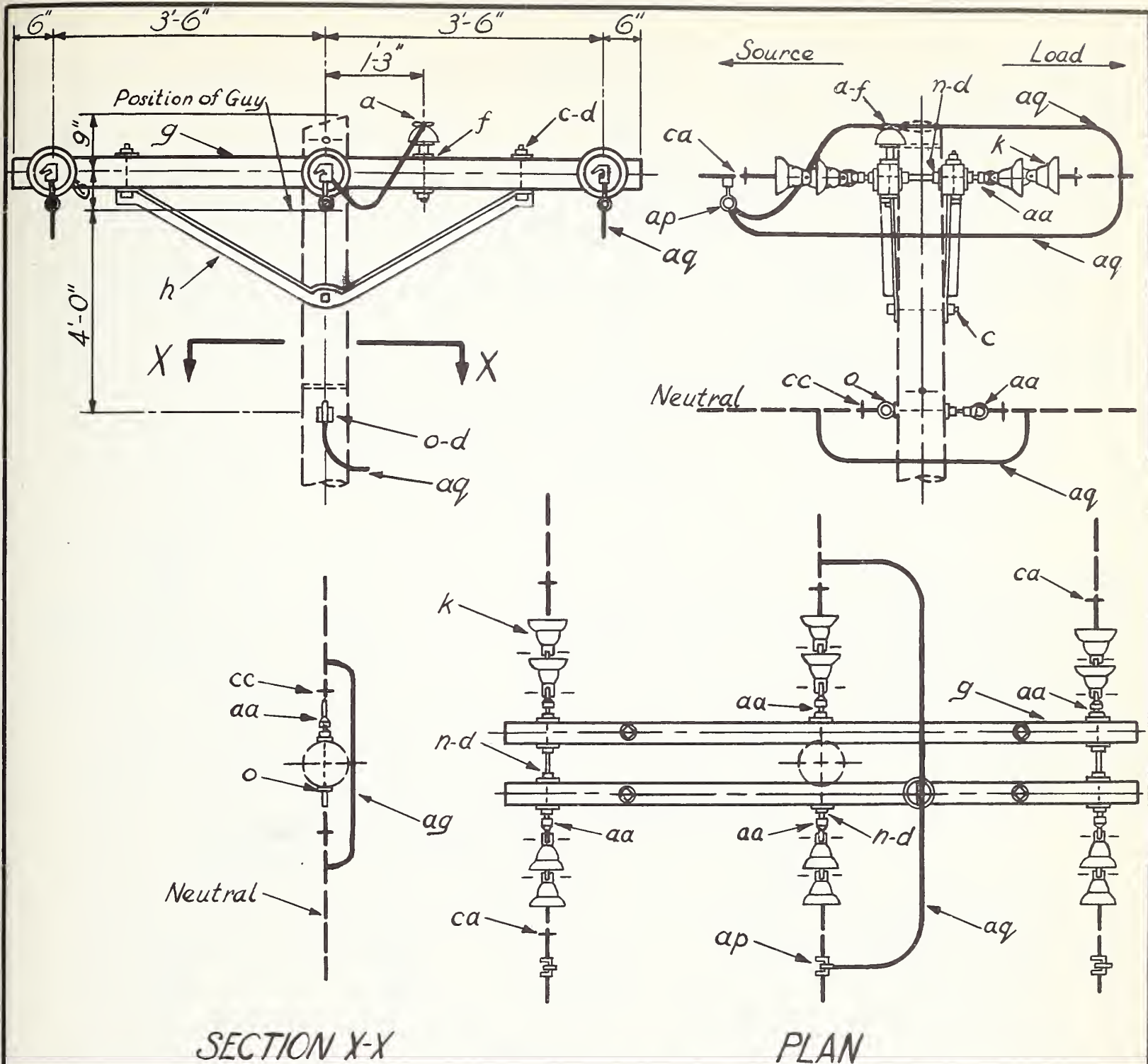
Scale: 1/2" = 1'-0"

Date: Apr. 20, 1949

No. REVISION

Date

C7R



ITEM	No. Req'd.	MATERIAL	ITEM	No. Req'd.	MATERIAL
a	1	Insulator, pin type	n	3	Bolt, double arming, $\frac{3}{8}$ " x req'd. l'gth.
c	1	Bolt, machine, $\frac{3}{8}$ " x req'd. length	o	1	Bolt, eye, $\frac{3}{8}$ " x req'd. length
C	4	Bolt, machine, $\frac{1}{2}$ " x req'd. length	aa	7	Nut, eye, $\frac{3}{8}$ "
d	12	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{3}{16}$ " hole	ap	3	Clamp, hot line, tap assembly
d	4	Washer, round $1\frac{1}{8}$ " dia, $\frac{3}{16}$ " hole	aq		Jumpers
f	1	Pin, crossarm, steel $\frac{3}{8}$ " x $10\frac{1}{2}$ "	ca	6	Deadend assembly, primary
g	2	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 8'-0"	cc	2	Deadend assembly, neutral
h	2	Brace, angle, $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{3}{16}$ ", 60" span	p		Connectors, as req'd.
k	12	Insulators, suspension			

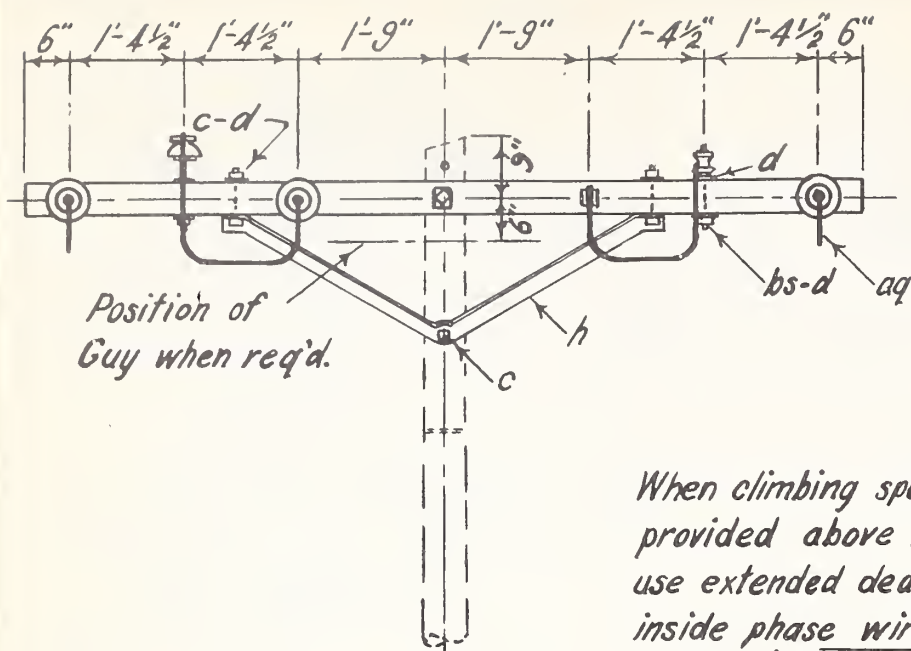
-----K.V. PRIMARY, 3-PHASE, 4-WIRE STAR  
CROSSARM CONSTRUCTION, DEADEND (DOUBLE)

Scale:  $\frac{1}{2}$ " = 1'-0"

Date: Apr. 18, 1949

No. REVISION DATE:

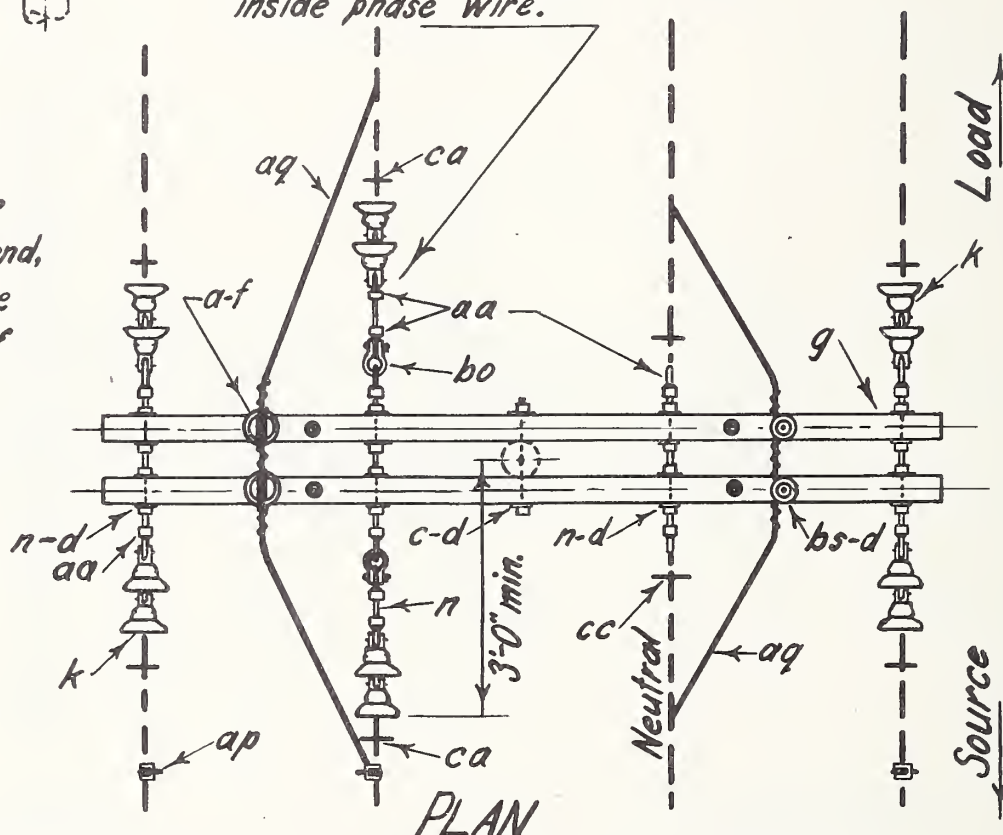
C 8 R



When climbing space must be provided above these conductors use extended deadends on the inside phase wire.

# NOTE:

When the line may be energized from either end, hot line clamps should be installed on both ends of the jumpers.



PLAN

ITEM	NO. REQ'D.	MATERIAL	ITEM	NO. REQ'D.	MATERIAL
a	2	Insulator, pin type	n	6	Bolt, double arming, 5/8" x req'd. length
c	2	Bolt, machine, 5/8" x req'd. length	p		Connectors, as req'd.
c	4	Bolt, machine, 1/2" x req'd. length	bo	2	Shackle, anchor
d	22	Washer, 2 1/4" x 2 1/4" x 3/16", 3/16" hole	bs	2	Bolt, single upset, insulated
d	4	Washer, round, 1 3/8" dia., 5/8" hole	aa	12	Nut, eye, 5/8"
f	2	Pin, crossarm, steel, 5/8" x 10 3/4"	ap	3	Clamp, hot line, tap assembly
g	2	Crossarm, 3 1/4" x 4 1/4" x 10'-0"	aq		Jumpers
h	2	Brace, angle, 1 1/2" x 1 1/2" x 3/8", 60" span	ca	6	Deadend assembly, primary
k	12	Insulator, suspension	cc	2	Deadend assembly, neutral

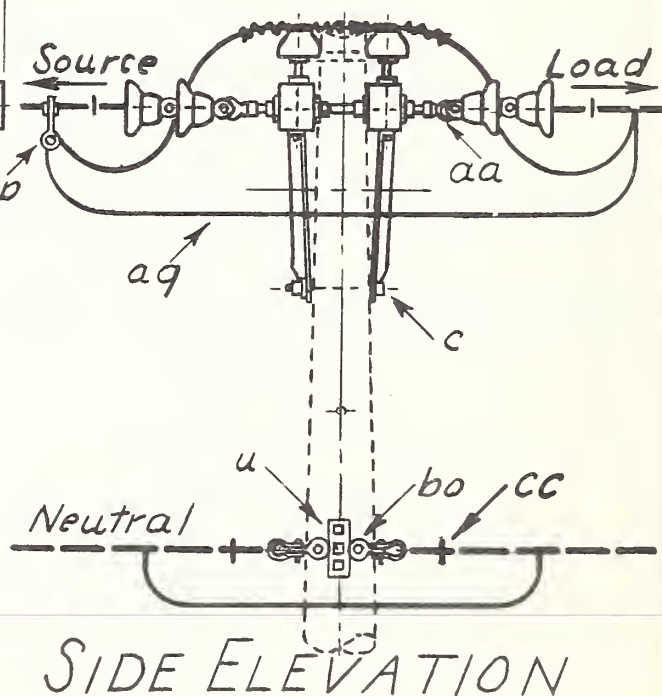
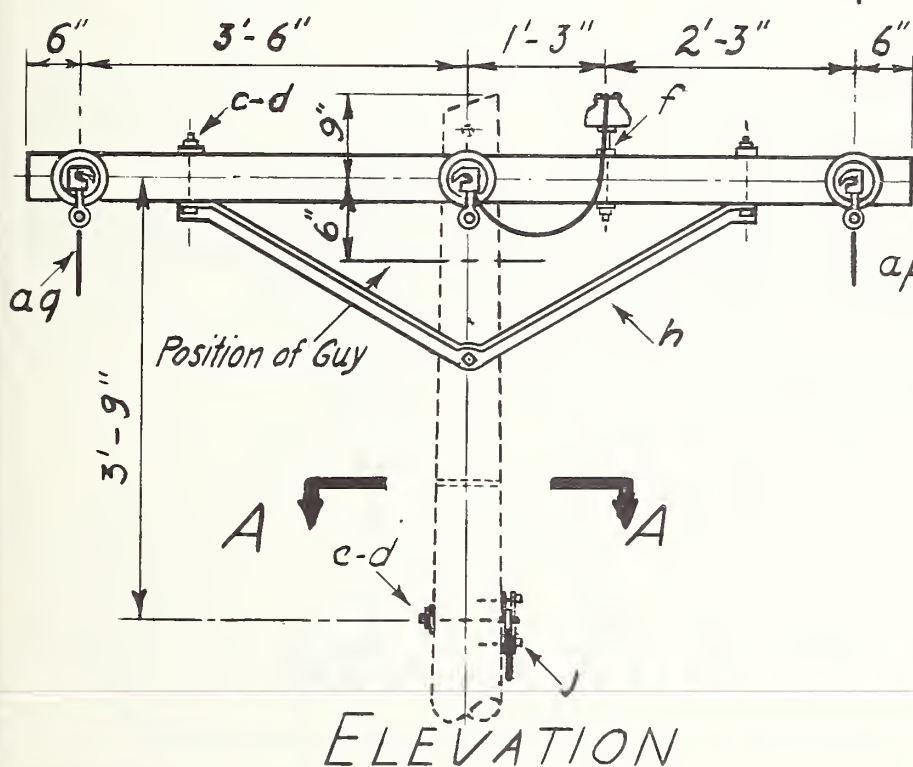
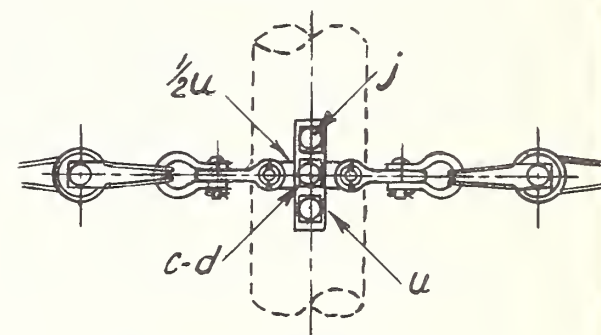
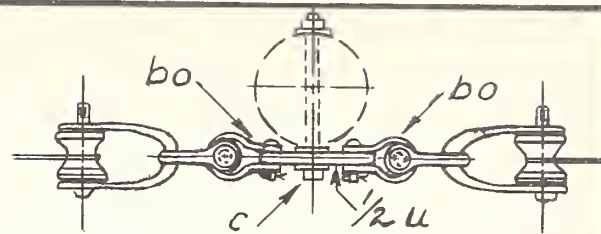
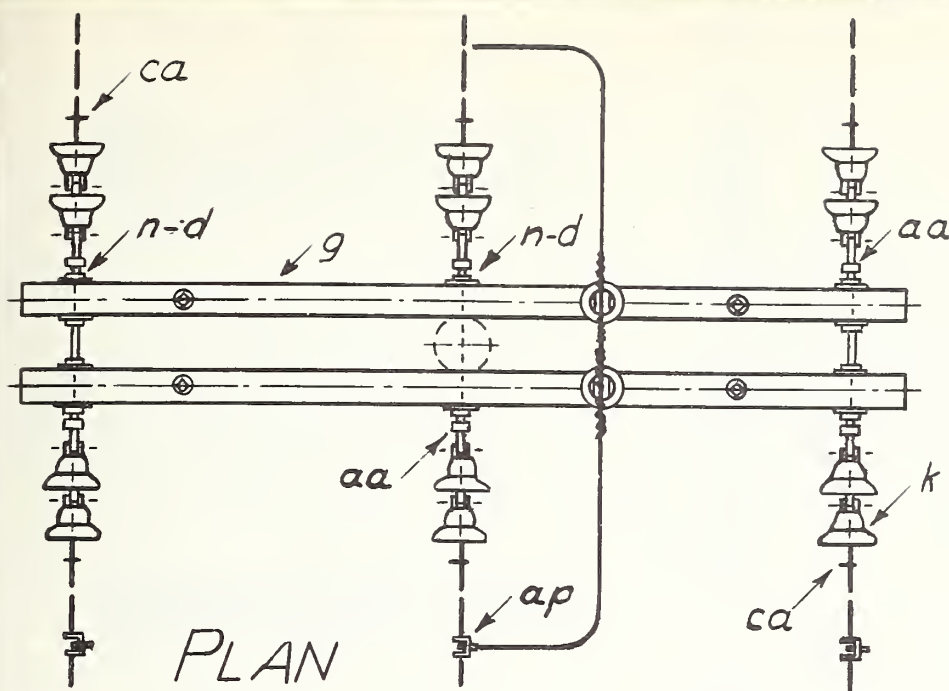
---KV. PRIMARY, 3-PHASE, 4-WIRE STAR  
CROSSARM CONSTRUCTION-DEADEND(DOUBLE)

Scale: 3/8"=1'-0"

Date: Jan. 18, 1949

No. REVISION DATE

C8-1R



ITEM	No.	MATERIAL	ITEM	No.	MATERIAL
a	2	Insulator, pin type	n	3	Bolt, doublearming, $\frac{5}{8}$ " x req'd. lg'th.
c	2	Bolt, machine, $\frac{5}{8}$ " x req'd. lg'th.	p		Connectors, as req'd.
c	4	Bolt, machine, $\frac{1}{2}$ " x req'd. lg'th.	u	1 1/2	Clamp, guy, 6" - Heavy duty
d	11	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole	aa	6	Nut, eye, $\frac{5}{8}$ "
d	4	Washer, rd, $1\frac{3}{8}$ " dia, $\frac{9}{16}$ " hole	ap	3	Clamp, hot line, tap assembly
f	2	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "	aq		Jumpers
g	2	Crossarm, $3\frac{3}{4}$ " x $4\frac{3}{4}$ " x 8'-0"	bo	4	Shackle, anchor
h	2	Brace, angle, $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{3}{16}$ ", 60" span	ca	6	Deadend assembly, primary
j	2	Screw, Lag, $\frac{1}{2}$ " x 4"	cc	2	Deadend assembly, neutral
k	12	Insulator, suspension			

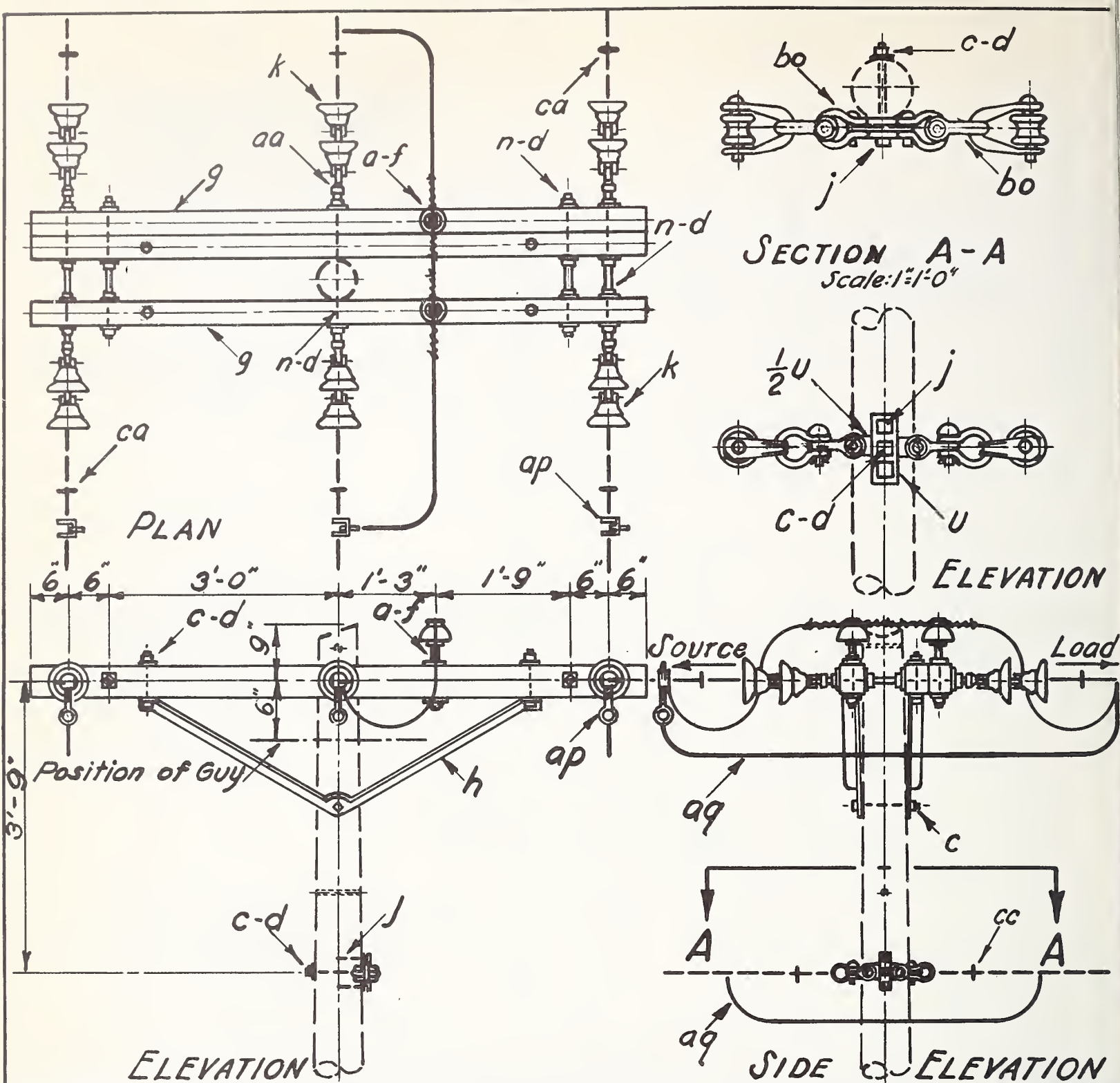
--- KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTRUCTION-DEADEND (DOUBLE)  
(LARGE CONDUCTORS)

Scale:  $\frac{1}{2}$ "=1'-0"

Date: Apr. 12, '48.

No. REVISION Date

C8-2



ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
a	2	Insulator, pin type	n	5	Bolt, double arming, 5/8" x reg'd. lg.
c	2	Bolt, machine, 5/8" x reg'd. length	p		Connectors, as req'd.
c	4	Bolt, machine, 1/2" x reg'd. length	u	1 1/2	Clamp, guy, 6" heavy duty
d	19	Washer, 2 1/4 x 2 1/4 x 3/16, 3/16 hole	aa	6	Nut, eye, 5/8"
d	4	Washer, rd, 1 3/8 diam, 9/16 hole	ap	3	Clamp, hot line, tap assembly
f	2	Pin, crossarm, steel, 5/8" x 10 3/4"	aq		Jumpers
g	3	Crossarm, 3 3/4 x 4 3/4 x 8'-0"	bo	4	Shackle, anchor
h	2	Brace, 1 1/2 x 1 1/2 x 3/16, 60" span	ca	6	Deadend assembly, primary
j	2	Screw, lag, 1/2" x 4"	cc	2	Deadend assembly, neutral
k	12	Insulator, suspension			

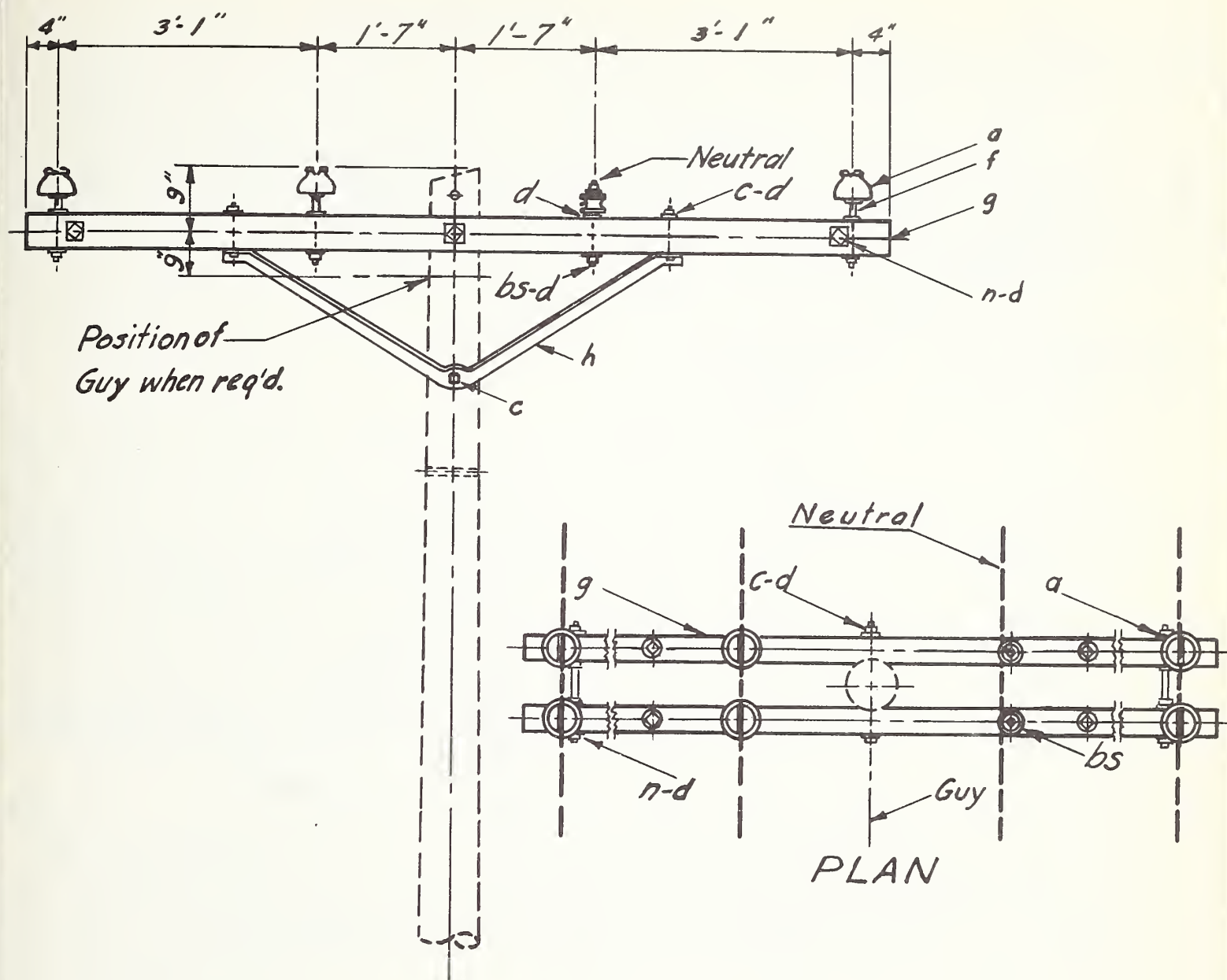
...KV. PRIMARY, 3 PHASE-4 WIRE STAR  
CROSSARM CONSTRUCTION, DEADEND (DOUBLE)  
LARGE CONDUCTORS WITH UNBALANCED LOADS

Scale: 1/2"=1'-0"

Date: Dec. 3, '47

No. REVISIONS DATE

C8-3



**NOTE:**

Wood crossarm braces of same span may be substituted.

ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
a	6	Insulator, pin type	f	6	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "
c	2	Bolt, machine, $\frac{5}{8}$ " x req'd. length	g	2	Crossarm, $3\frac{3}{4}$ " x $4\frac{3}{4}$ " x 10'-0"
c	4	Bolt, machine, $\frac{1}{2}$ " x req'd. length	h	2	Brace, $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{3}{16}$ " Angle, 60" span
d	14	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{1}{16}$ " hole	n	2	Bolt, double arming, $\frac{5}{8}$ " x req'd. length
d	4	Washer, round, $1\frac{3}{8}$ " dia. $\frac{9}{16}$ " hole	bs	2	Bolt, single upset, insulated

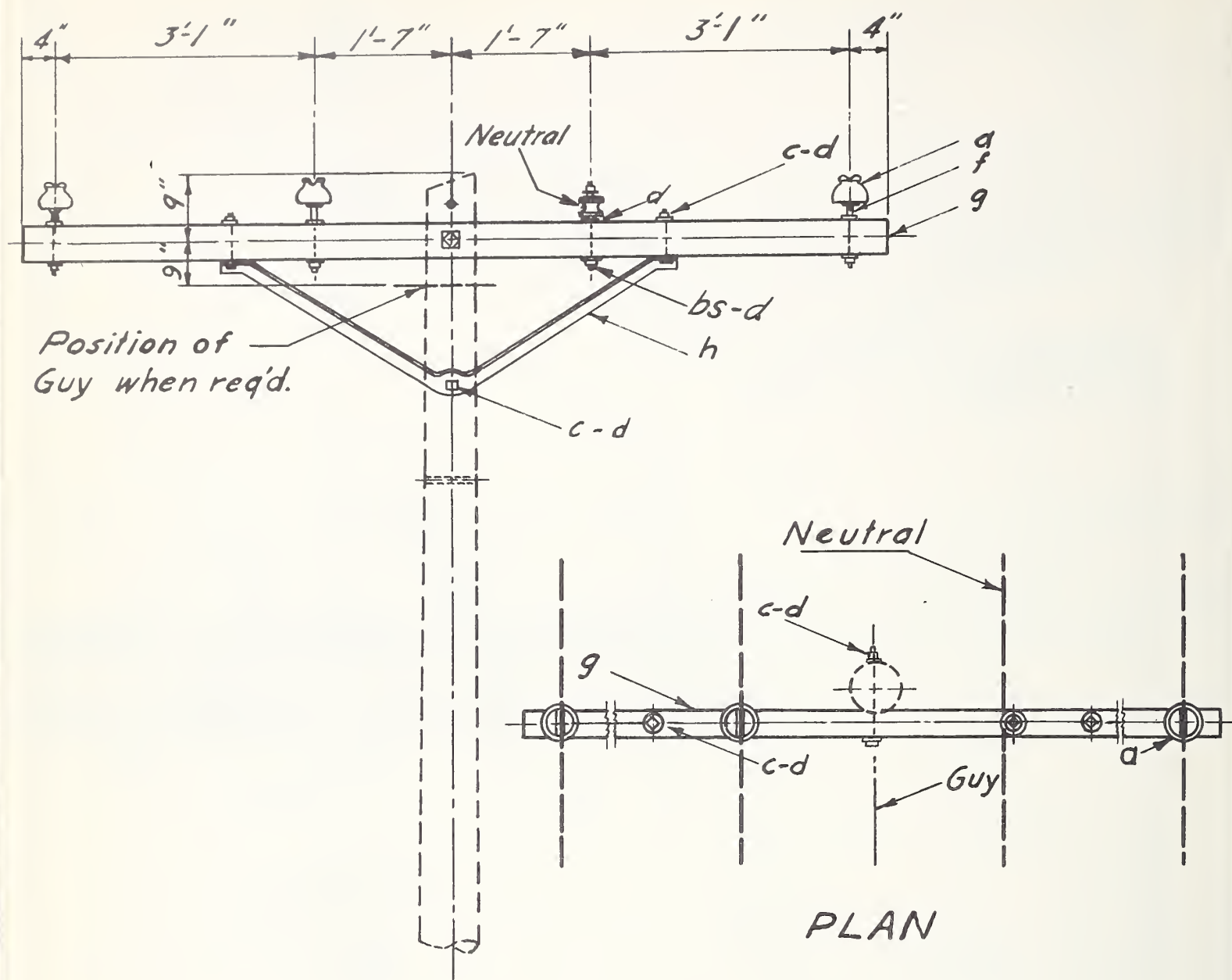
-----KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTRUCTION-DOUBLE LINE ARM

Scale:  $\frac{1}{2}$ " = 1'-0"

Date:

1	Changed neutral support	6-14-48
No	REVISION	DATE

C9R



**NOTE:**

Wood crossarm brace of same span may be substituted.

ITEM	NO. REQD.	MATERIAL	ITEM	NO. REQD.	MATERIAL
a	3	Insulator, pin type	f	3	Pin, crossarm, steel, $\frac{5}{8}$ " $\times$ 10 $\frac{3}{4}$ "
c	2	Bolt, machine, $\frac{5}{8}$ " $\times$ req'd. length	g	1	Crossarm, 3 $\frac{3}{4}$ " $\times$ 4 $\frac{3}{4}$ " $\times$ 10'-0"
c	2	Bolt, machine, $\frac{1}{2}$ " $\times$ req'd. length	h	1	Brace, 1 $\frac{1}{2}$ " $\times$ 1 $\frac{1}{2}$ " $\times$ $\frac{3}{16}$ " Angle, 60" span
d	5	Washer, 2 $\frac{1}{4}$ " $\times$ 2 $\frac{1}{4}$ " $\times$ $\frac{3}{16}$ ", $\frac{3}{16}$ " hole	bs	1	Bolt, single upset, insulated
d	2	Washer, round, 1 $\frac{3}{8}$ " dia., $\frac{9}{16}$ " hole			

-----KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTRUCTION-SINGLE LINE ARM

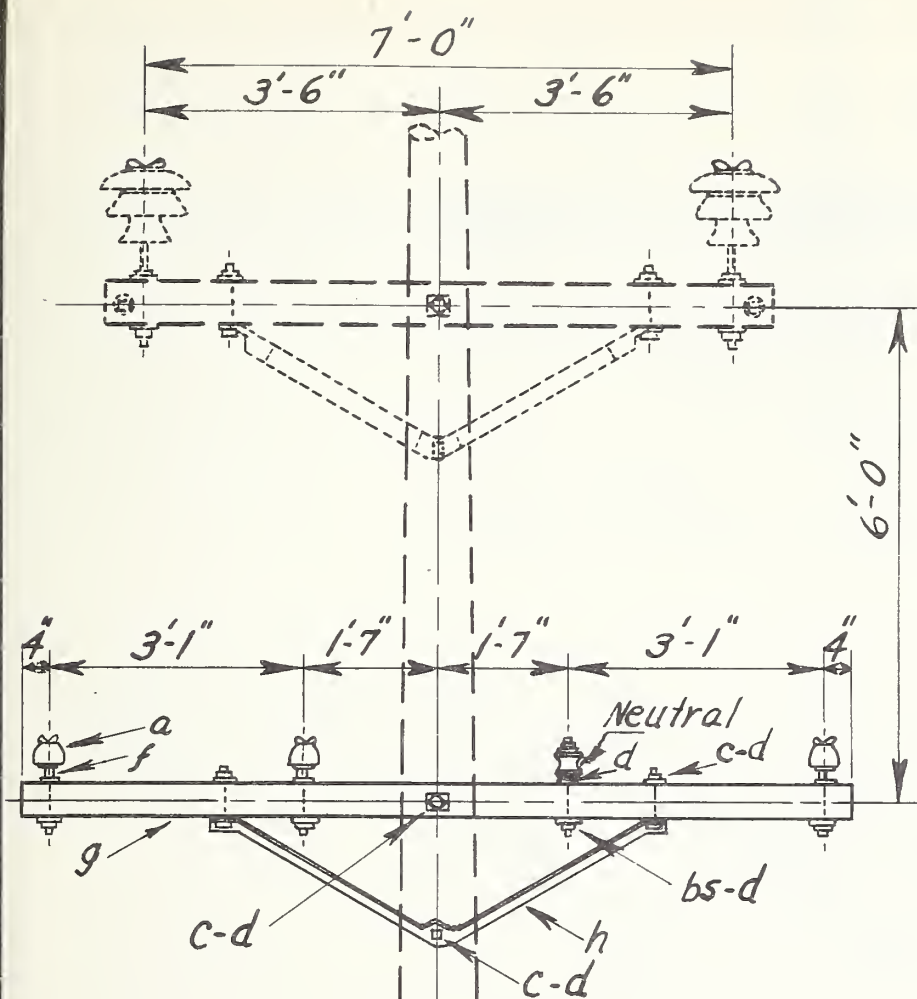
Scale:  $\frac{1}{2}$ " = 1'-0"

Date:

1 Changed neutral support 6-9-46

NO REVISION DATE

C9-1R

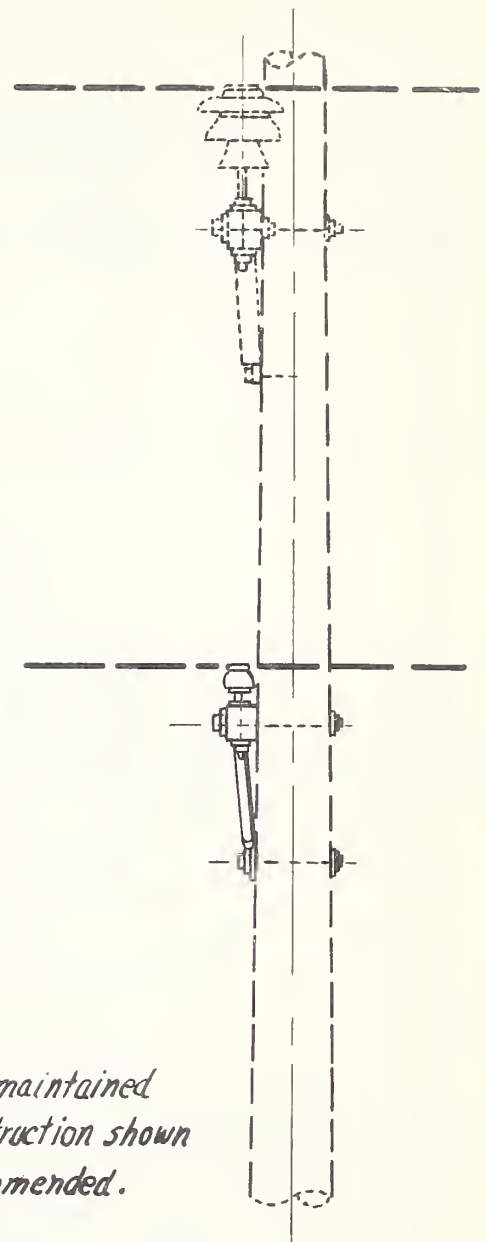


**NOTE:**

Where the heavier construction required for large conductors is desired, specify this assembly unit as C9-1U BL and change items in the material list as required.

**NOTE:**

When all circuits are not maintained by the same line crews construction shown on drawing C9-1U A is recommended.



ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
a	3	Insulator, pin type	f	3	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "
c	2	Bolt, machine, $\frac{5}{8}$ " x req'd. length	g	1	Cross arm, $3\frac{3}{4}$ " x $4\frac{3}{4}$ " x $10'-0"$
c	2	Bolt, machine, $\frac{1}{2}$ " x req'd. length	h	1	Brace, $1\frac{1}{2}$ " x $\frac{1}{2}$ " x $\frac{3}{16}$ " Angle, 60" span
d	5	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{3}{16}$ " hole	bs	1	Bolt, single upset, insulated
d	2	Washer, round, $1\frac{3}{8}$ " dia., $\frac{9}{16}$ " hole			

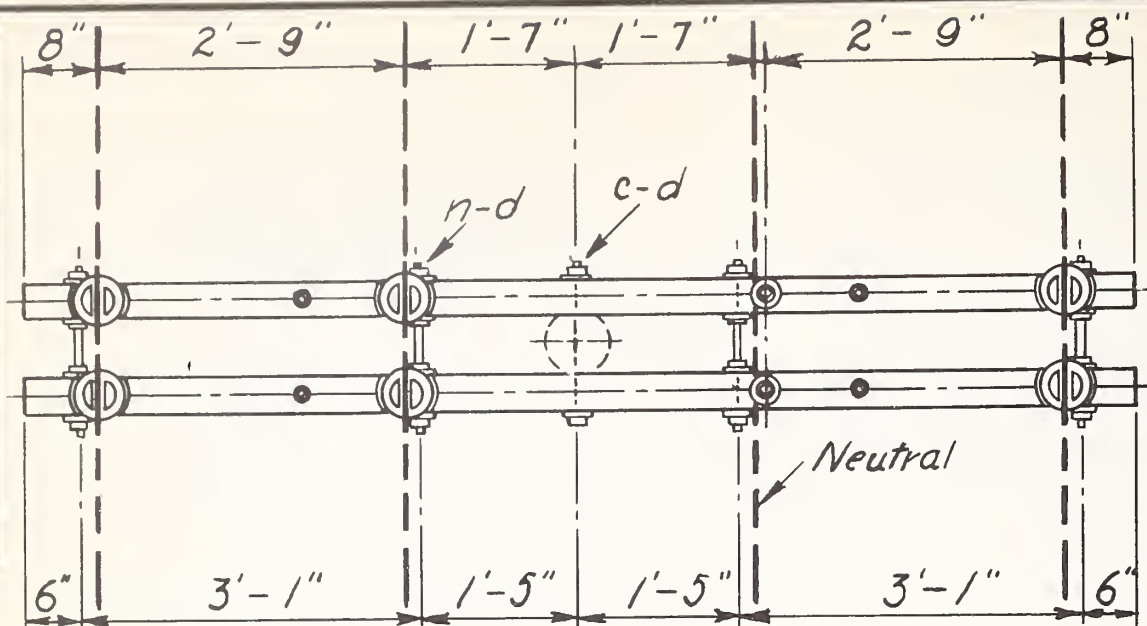
\_\_\_\_ KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTRUCTION-SINGLE LINE ARM-  
SINGLE CIRCUIT UNDERBUILD

Scale:  $\frac{3}{8}$ " =  $1'-0"$

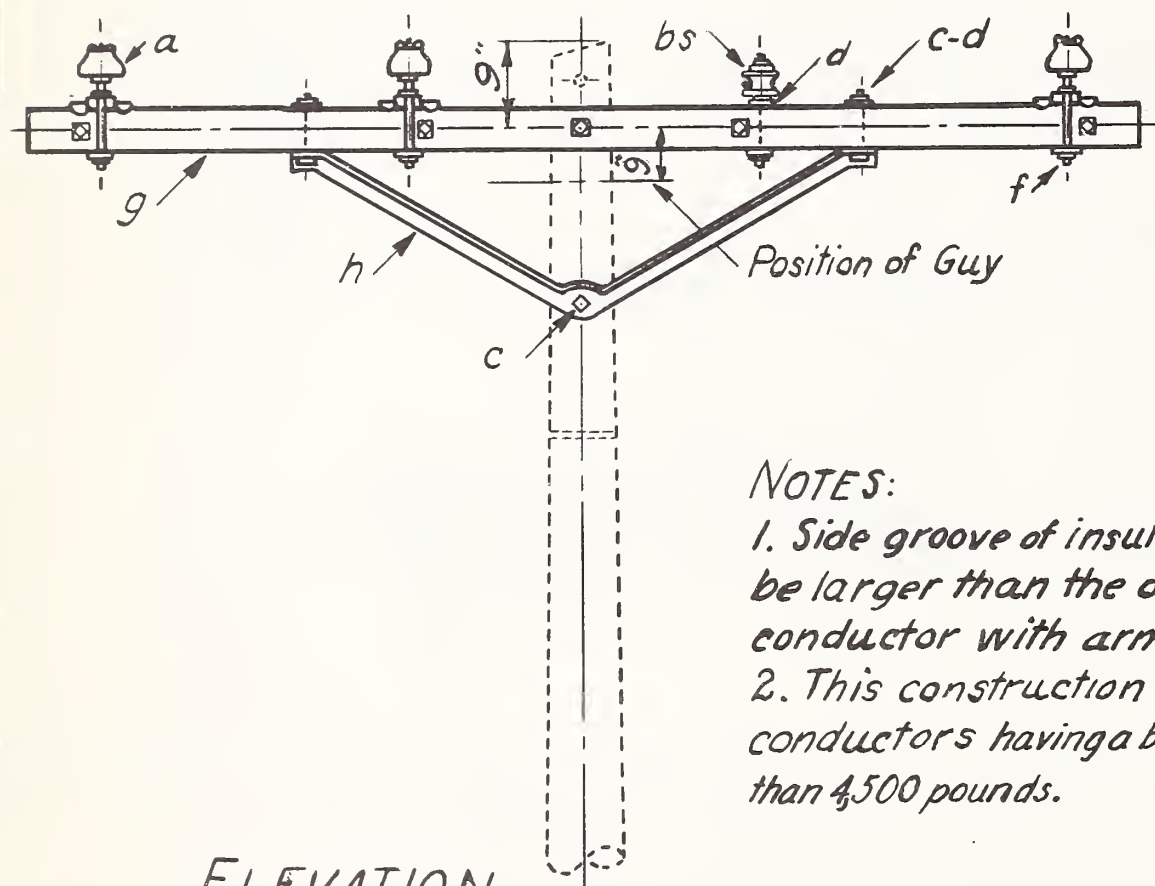
Date: Apr. 22, '49

C9-1U B

No.	REVISION	DATE
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PLAN



ELEVATION

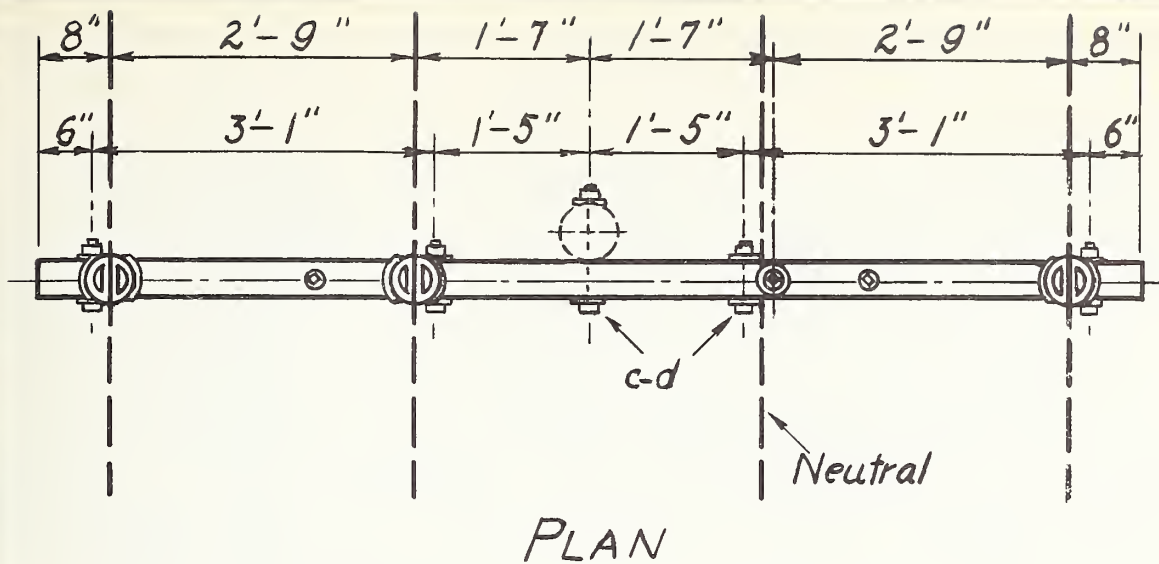
NOTES:

1. Side groove of insulator should always be larger than the overall diameter of conductor with armor rods, if required.
2. This construction recommended for all conductors having a breaking strength of more than 4,500 pounds.

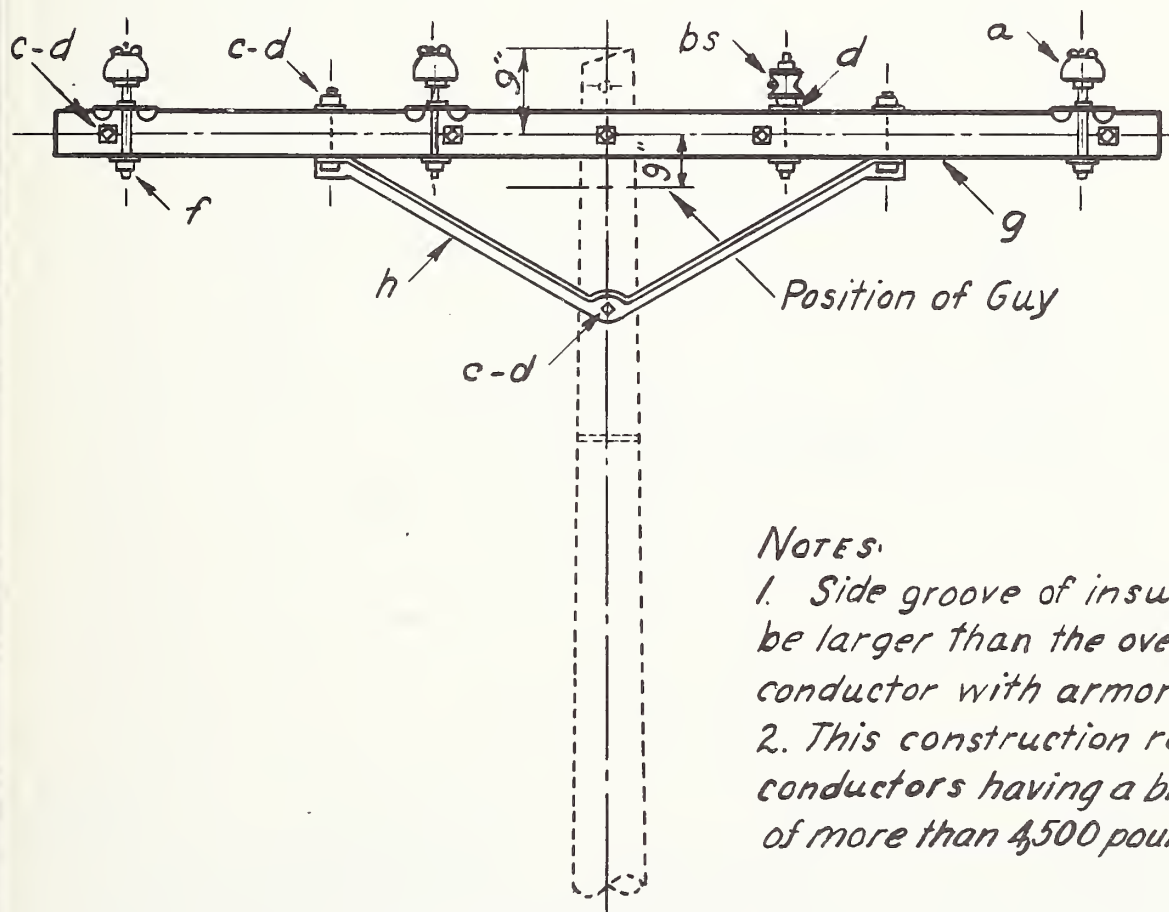
ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
a	6	Insulator, pin type.	f	6	Pin, cross arm, steel, clamp type
c	2	Bolt, machine, $\frac{5}{8}$ " x req'd. l'gth.	g	2	Cross arm, $3\frac{3}{4}$ " x $4\frac{3}{4}$ " x 10'-0"
c	4	Bolt, machine, $\frac{1}{2}$ " x req'd. l'gth.	h	2	Brace, angle, $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{3}{16}$ ", 60° span
d	22	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{1}{16}$ " hole	n	4	Bolt, double arming, $\frac{5}{8}$ " x req'd. l'g.
d	4	Washer, rd. $1\frac{3}{8}$ " diam. $\frac{9}{16}$ " hole	bs	2	Bolt, single upset, insulated

--- K.V. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTRUCTION - DOUBLE LINE ARM  
(LARGE CONDUCTORS)

1	Changed note # 2	11/10/48	Scale: $\frac{1}{2}$ " = 1'-0"	Date: Apr. 21, '48
No.	REVISION	DATE		C9-2R



PLAN



ELEVATION

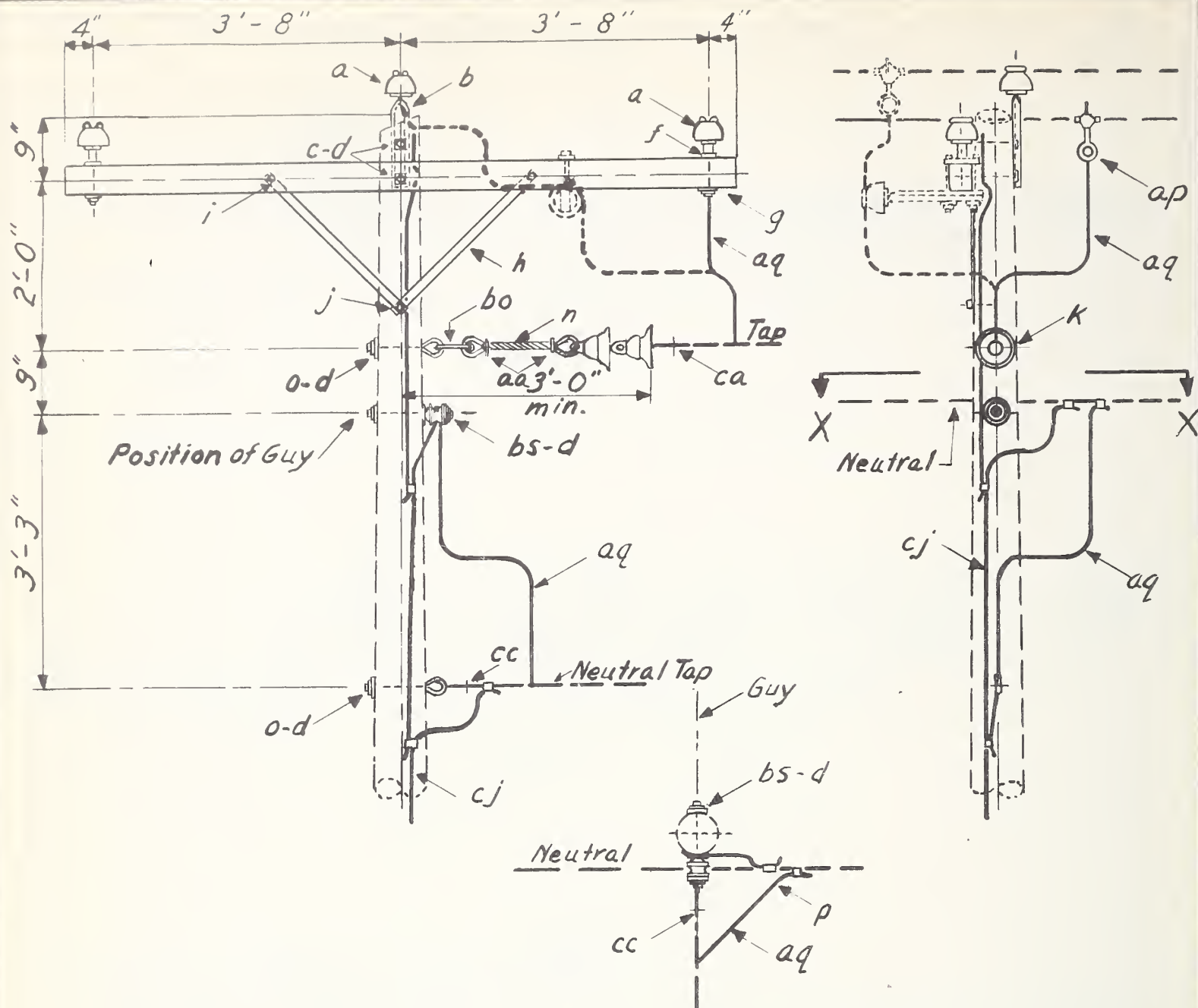
NOTES:

1. Side groove of insulator should always be larger than the overall diameter of conductor with armor rods, if required.
2. This construction recommended for all conductors having a breaking strength of more than 4,500 pounds.

ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
a	3	Insulator, pin type	f	3	Pin, crossarm, steel, clamp type
c	6	Bolt, machine, $\frac{5}{8}$ " x req'd. length	g	1	Crossarm, $3\frac{3}{4}$ " x $4\frac{3}{4}$ " x 10'-0"
c	2	Bolt, machine, $\frac{1}{2}$ " x req'd. length	h	1	Brace, angle, $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{3}{16}$ ", 60" span
d	13	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{1}{16}$ " hole	bs	1	Bolt, single upset, insulated
d	2	Washer, rd, $1\frac{3}{8}$ " diam., $\frac{9}{16}$ " hole			

--- Kv. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTRUCTION - SINGLE LINE ARM  
(LARGE CONDUCTORS)

1	Changed note #2	11/19/48	Scale: $\frac{1}{2}$ "=1'-0"	Date: Apr. 27, '48
No	REVISION	DATE		C 9-3R



SECTION X-X

ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
a	4	Insulator, pin type	n	1	Bolt, double arming, $\frac{5}{8}$ " x req'd. lgth.
b	2	Pin, pole top, 15"	p		Connectors, as req'd.
c	4	Bolt, machine, $\frac{5}{8}$ " x req'd. length	aa	2	Nut, eye
d	7	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{3}{16}$ " hole	ap	1	Clamp, hot line, tap assembly
f	2	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "	aq		Jumpers
g	1	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 8'-0" lg	bo	1	Shackle, anchor
h	2	Brace, $1\frac{1}{4}$ " x $\frac{1}{4}$ " x 28"	bs	1	Bolt, single upset, insulated
i	2	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "	ca	1	Deadend assembly, primary
j	1	Screw, lag, $\frac{1}{2}$ " x 4"	cc	1	Deadend assembly, neutral
k	2	Insulator, suspension	cj	1	Ground wire assembly and rod
o	2	Bolt, eye, $\frac{5}{8}$ " x req'd. length			

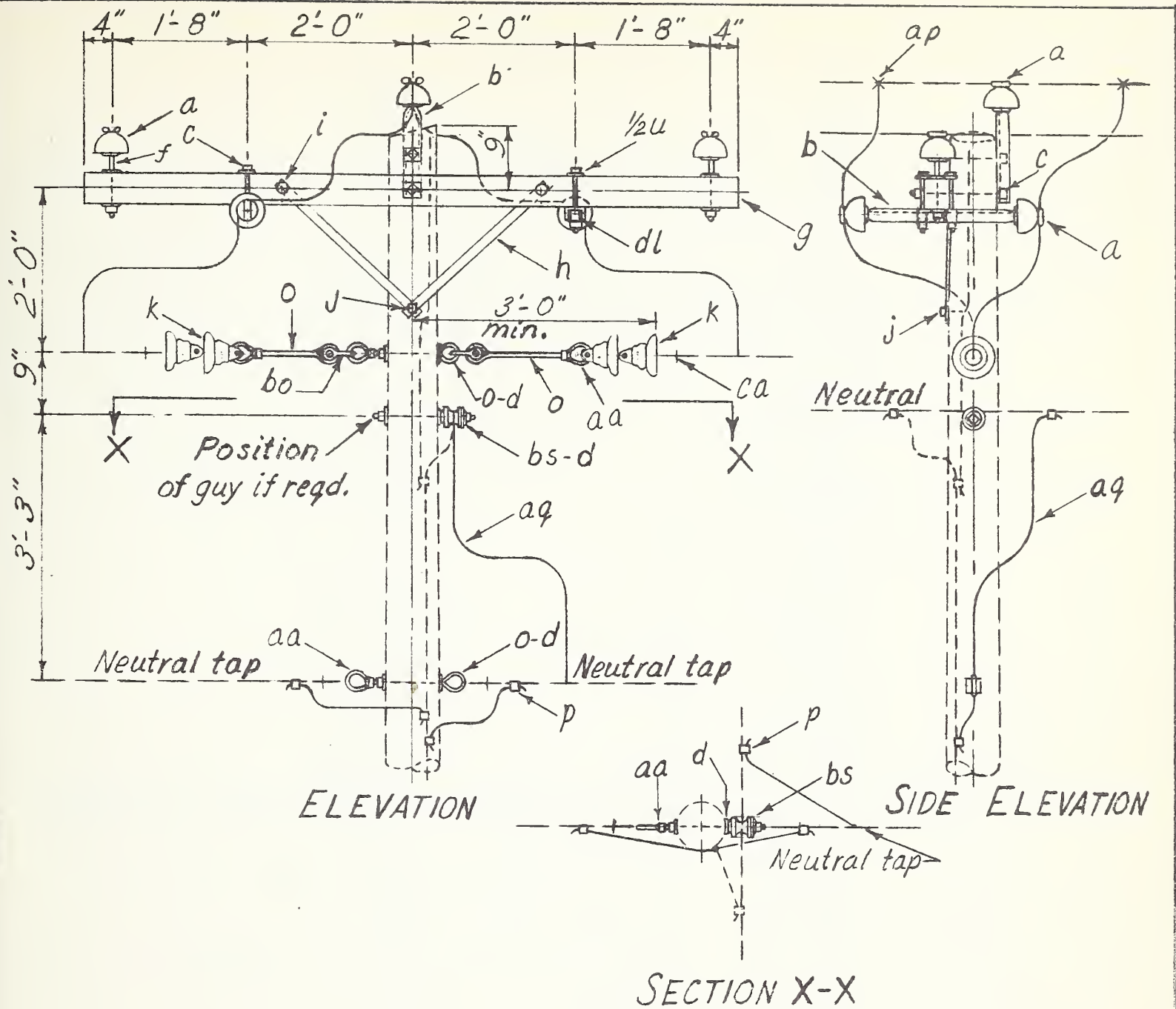
KV. PRIMARY, 3 PHASE 4-WIRE STAR  
CROSSARM CONSTR-SINGLE PHASE TAP AT 0° TO 5° ANGLE

Scale:  $\frac{1}{2}$ " = 1'-0"

Date: Mar. 14, 1949

No. REVISION DATE:

C21R



ITEM	NO. REQ'D.	MATERIAL	ITEM	NO. REQ'D.	MATERIAL
a	5	Insulator, pin type	p		Connectors, as required
b	3	Pin, pole top, 15"	u	1	Clamp, guy, 3-bolt, 6" long
c	6	Bolt, machine, $\frac{5}{8}$ " x req'd. lgth.	aa	4	Nut, eye
d	8	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole	ap	2	Clamp, hot line, tap assembly
f	2	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "	aq		Jumpers and leads, as req'd.
g	1	Crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "	bo	2	Shackle, anchor
h	2	Brace, $1\frac{1}{4}$ " x $\frac{1}{4}$ " x 28"	bs	1	Bolt, single upset, insulated
i	2	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "	ca	2	Deadend assembly, primary
j	1	Screw, lag, $\frac{1}{2}$ " x 4"	cc	2	Deadend assembly, neutral
k	4	Insulator, suspension	dl	4	Pipe spacer, pole pin, $\frac{3}{4}$ " dia x $1\frac{1}{2}$ "
o	4	Bolt, eye, $\frac{5}{8}$ " x req'd. length			

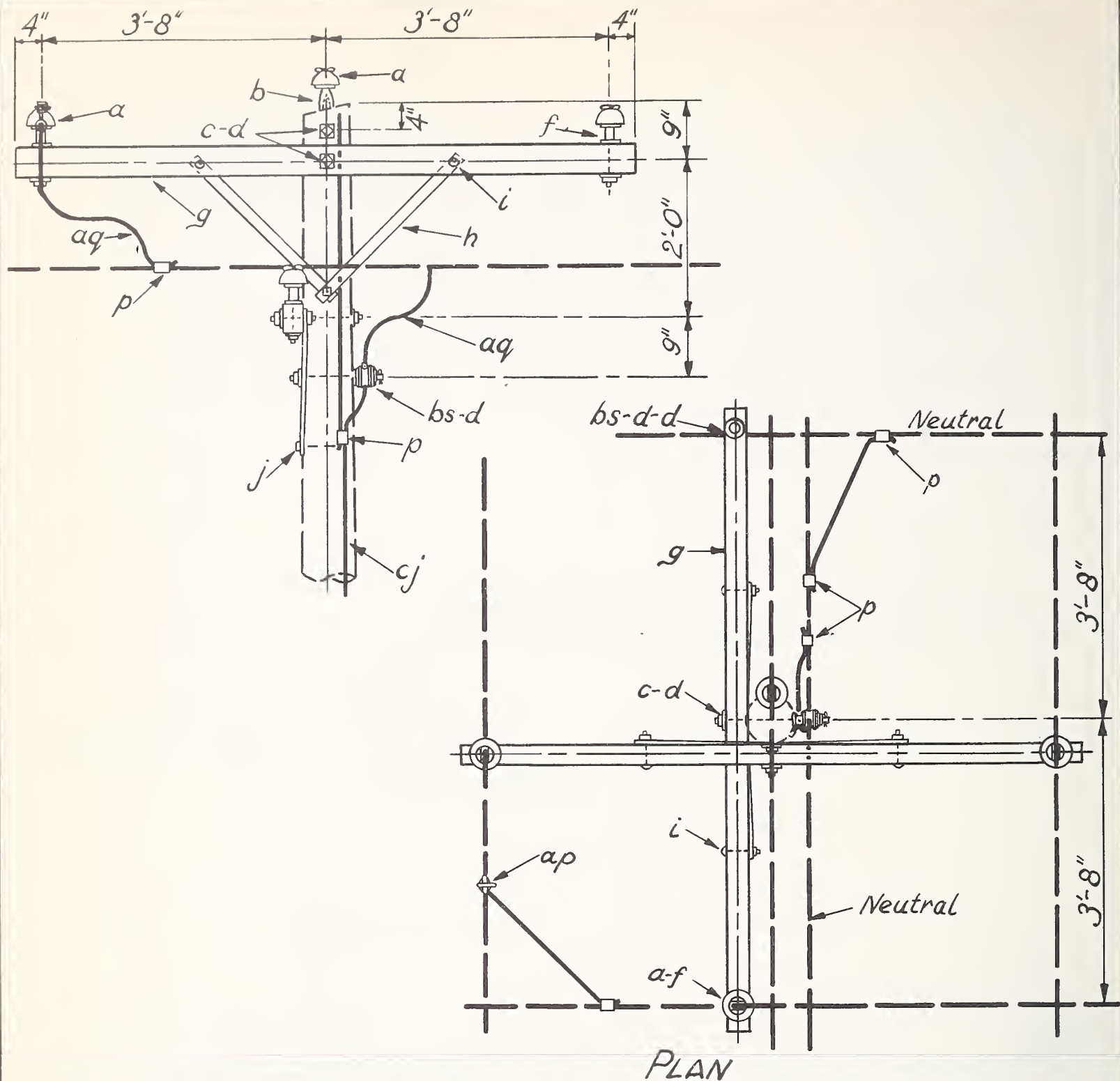
7.2/12.5 KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONST.-TWO SINGLE PHASE TAPS AT 0° TO 5° ANGLE

Scale:  $\frac{1}{2}$ " = 1'-0"

Date: April, 29, 1953

1	Redrawn	4-29-53
NO.	REVISION	DATE:

C 21-1R



ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
a	4	Insulator pin type	j	2	Screw, lag, $\frac{1}{2}$ " x 4"
b	1	Pin, pole top, 15"	p		Connectors, as req'd.
c	3	Bolt, machine, $\frac{5}{8}$ " x req'd length			
d	7	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{1}{16}$ " hole	ap	1	Clamp, hot line
f	3	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{1}{4}$ "	aq		Jumpers
g	2	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 8'-0"	bs	2	Bolt, single upset, insulated
h	4	Brace, $1\frac{1}{4}$ " x $1\frac{1}{4}$ " x 28"	cj		Ground wire assembly and rod
i	4	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "			

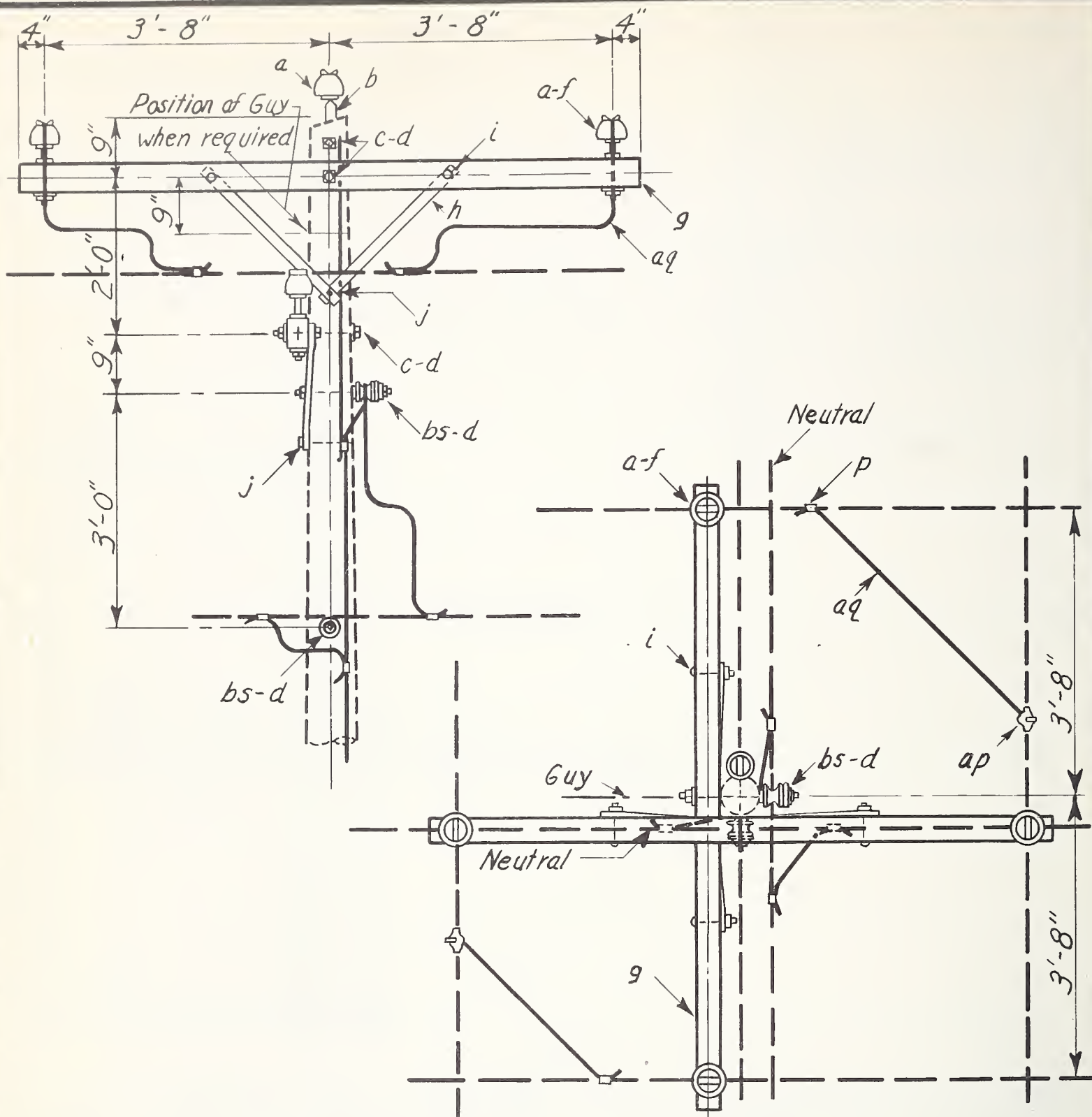
-----KV. PRIMARY, 3-PHASE, 4-WIRE STAR  
 CROSSARM CONSTR. - SINGLE - PHASE JUNCTION AT 0° TO 5° ANGLE  
 Scale:  $\frac{1}{2}$ " = 1'-0"

Date: Apr. 20, '49

No. REVISION DATE

C 22 R





PLAN

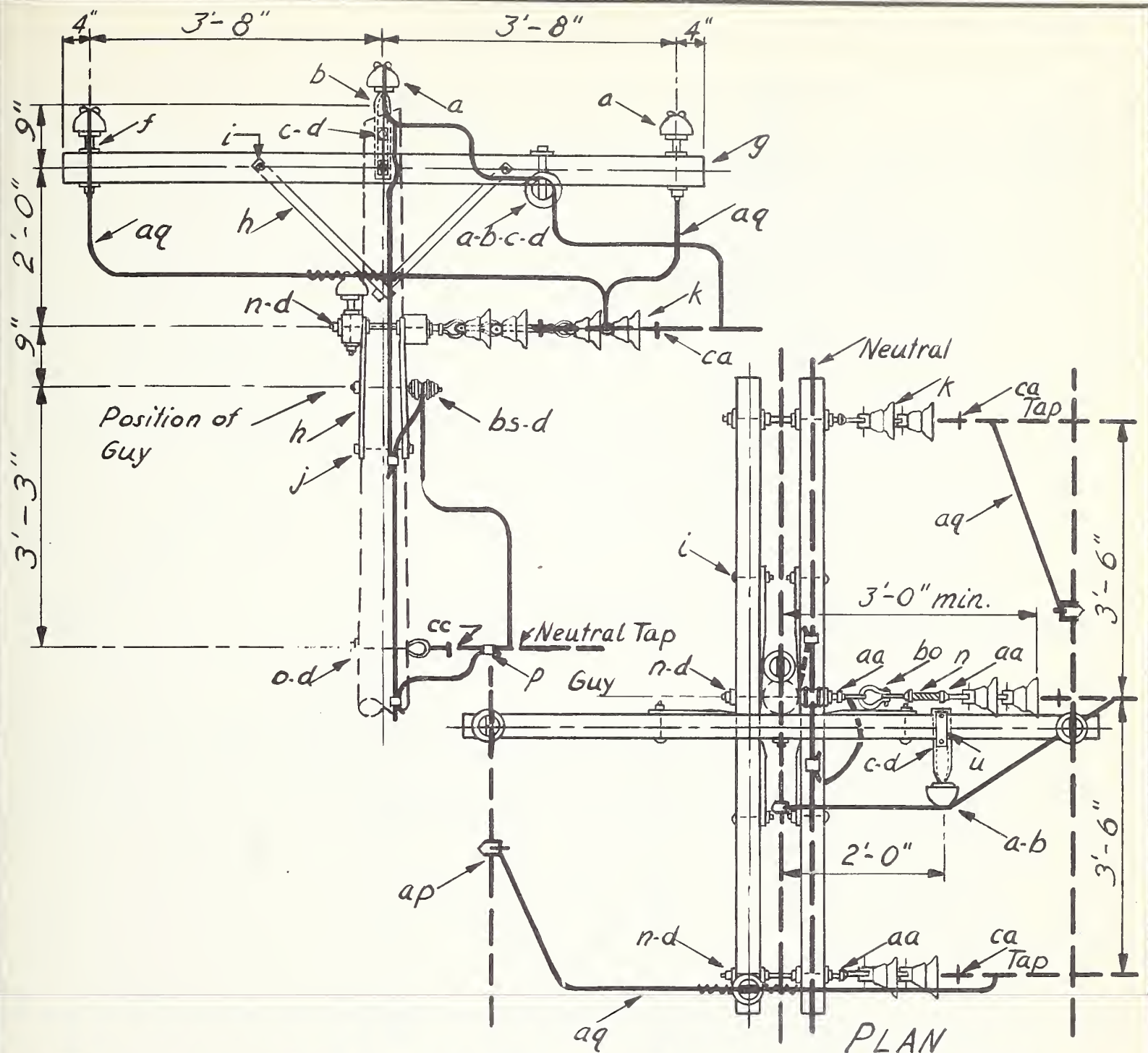
ITEM	NO. REQ'D.	MATERIAL	ITEM	NO. REQ'D.	MATERIAL
a	5	Insulator, pin type	i	4	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "
b	1	Pin, pole top, 15"	j	2	Screw, lag, $\frac{1}{2}$ " x 4"
c	3	Bolt, machine, $\frac{5}{8}$ " x req'd. length	p		Connectors, as required
d	6	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{3}{16}$ " hole	ap	2	Clamp, hot line, tap assembly
f	4	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "	aq		Jumpers
g	2	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 8'-0"	bs	2	Bolt, single upset, insulated
h	4	Brace, $1\frac{1}{4}$ " x $\frac{1}{4}$ " x 28"			

-----KV. PRIMARY 3-PHASE 4-WIRE STAR  
CROSSARM CONSTR. - TWO-PHASE JUNCTION AT 0° TO 5° ANGLE  
Scale:  $\frac{1}{2}$ " = 1'-0"

Date: Apr. 1, 1949

NO. REVISION DATE

C 24 R



ITEM	NO REQD	MATERIAL	ITEM	NO REQD	MATERIAL
a	5	Insulator, pin type	o	1	Bolt, eye, $\frac{5}{8}$ " x req'd. length
b	2	Pin, pole top, 15"	p		Connectors, as req'd.
c	4	Bolt, machine $\frac{5}{8}$ " x req'd. length	u	$\frac{1}{2}$	Clamp, guy, 3-bolt, 6" long
d	16	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole	aa	5	Nut, eye
f	3	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "	ap	3	Clamp, hot line, tap assembly
g	3	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 8'-0" long	aq		Jumpers
h	6	Brace, $1\frac{1}{4}$ " x $\frac{1}{4}$ " x 28"	bo	1	Shackle, anchor
i	6	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "	bs	1	Bolt, single upset, insulated
j	3	Screw, lag, $\frac{1}{2}$ " x 4"	ca	3	Deadend assembly, primary
k	6	Insulator, suspension	cc	1	Deadend assembly, neutral
n	4	Bolt, double arming, $\frac{5}{8}$ " x req'd. lgth	c.j	1	Ground wire assembly and rod

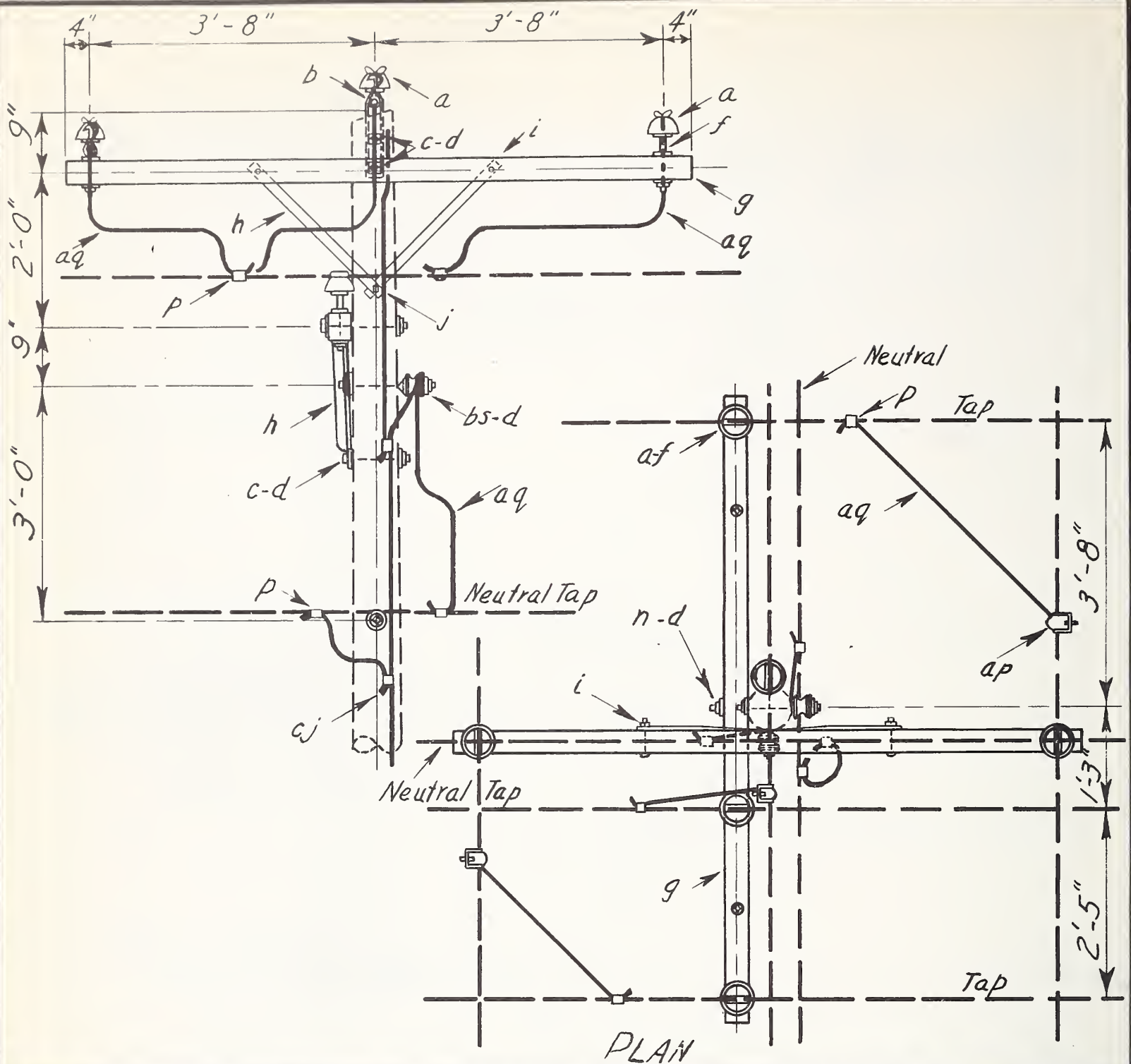
-----KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTR.-3-PHASE TAP AT 0° TO 5° ANGLE

Scale:  $\frac{1}{2}$ " = 1'-0"

Date: Mar. 31, 1949

NO. REVISION DATE:

C25R



ITEM	NO. REQD.	MATERIAL	ITEM	NO. REQD.	MATERIAL
a	6	Insulator, pin type	c	2	Bolt, machine, $\frac{1}{2}$ " x req'd. length
b	1	Pin, pole top, 15"	h	1	Brace, $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{3}{16}$ " angle, 60" span
c	4	Bolt, machine, $\frac{5}{8}$ " x req'd. lgth.	p		Connectors, as req'd.
d	7	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole	d	2	Washer, round, $1\frac{3}{8}$ " dia., $\frac{9}{16}$ " hole
f	6	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "	ap	3	Clamp, hot line, tap assembly
g	2	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 8'0" long	aq		Jumpers
h	2	Brace, $1\frac{1}{4}$ " x $\frac{1}{4}$ " x 28"	bs	2	Bolt, single upset, insulated
i	2	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "	cj	1	Ground wire assembly and rod
j	2	Screw, lag, $\frac{1}{2}$ " x 4"			

KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTR. - 3-PHASE JUNCTION AT 0° TO 5° ANGLE

Scale:  $\frac{1}{2}$ " = 1'-0"

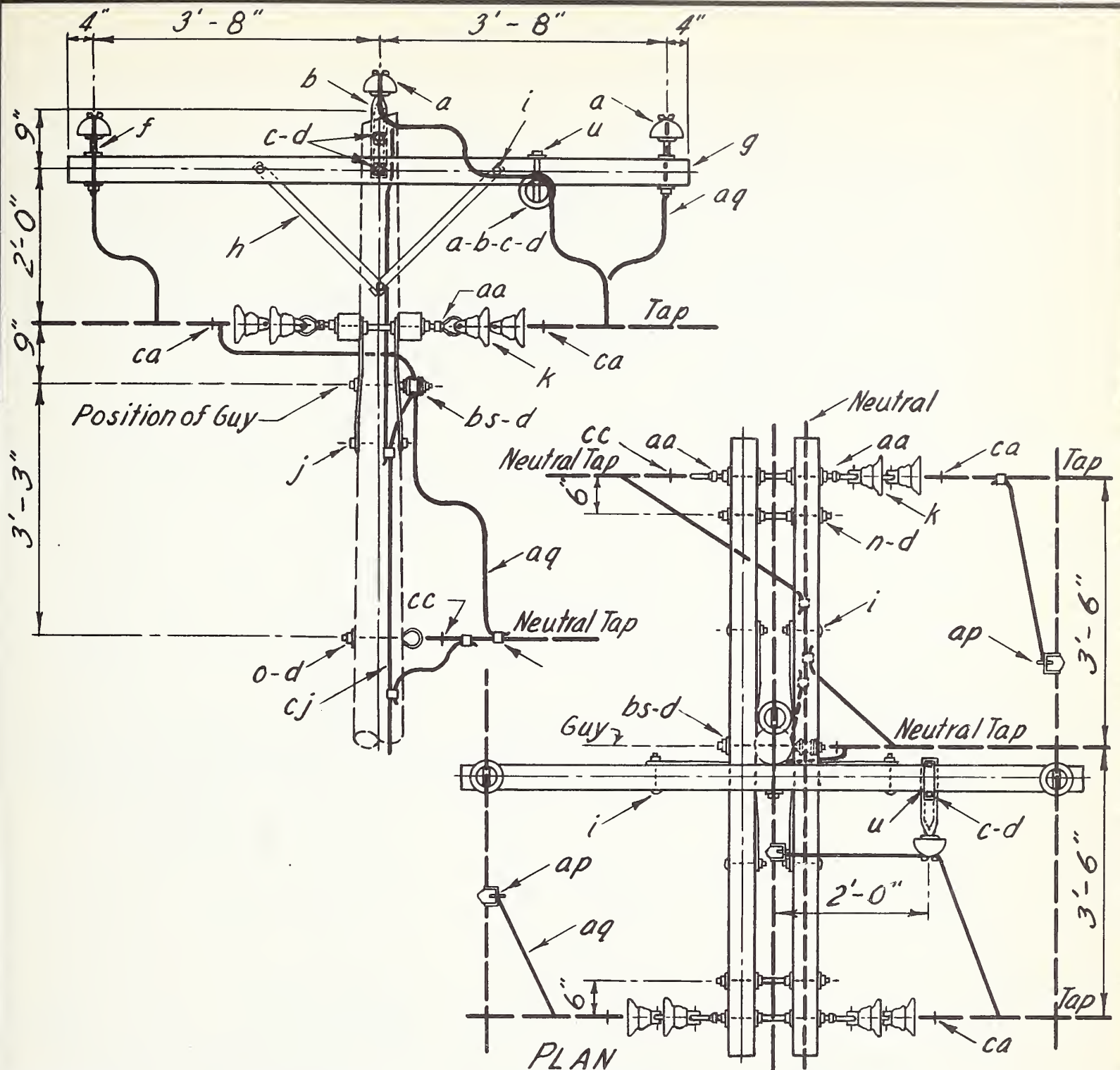
Date: Apr. 7, 1949

NO.

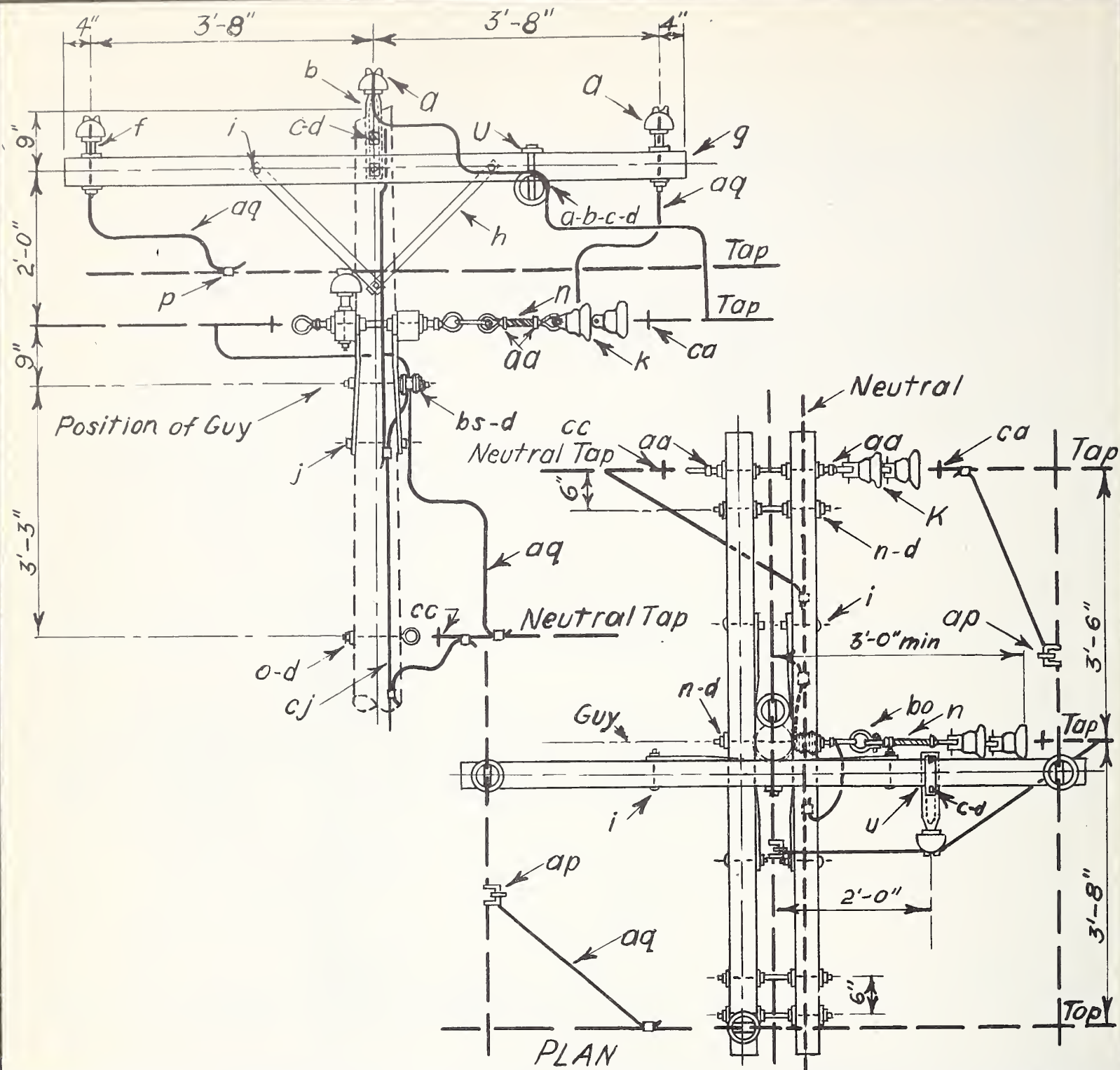
REVISION

DATE:

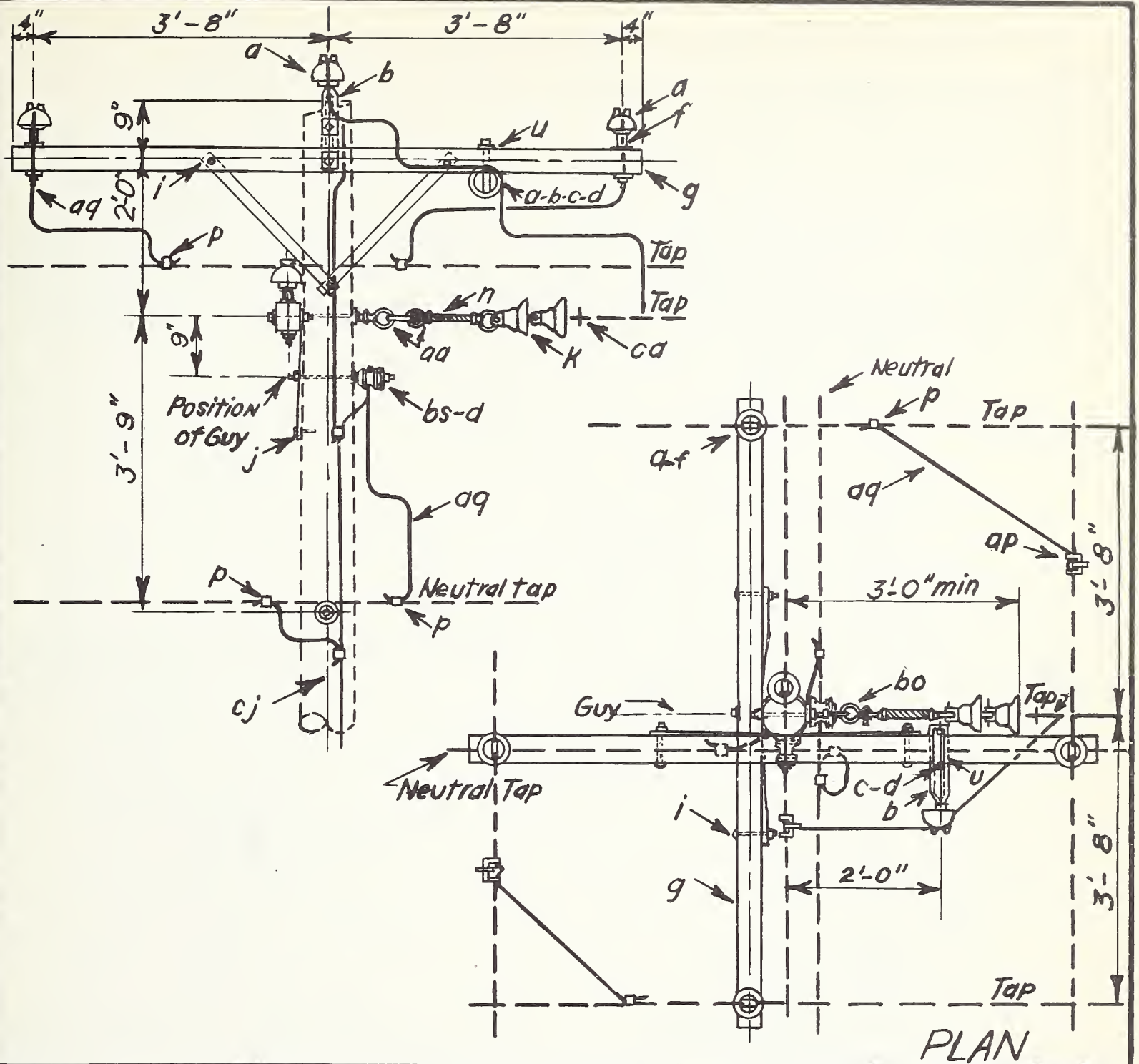
C 26 R1



ITEM	NO. REQ'D.	MATERIAL	ITEM	NO. REQ'D.	MATERIAL
a	4	Insulator, pin type	n	4	Bolt, double arming, $\frac{5}{8}$ " x req'd. lgth.
b	2	Pin, pole top, 15"	o	1	Bolt, eye, $\frac{5}{8}$ " x req'd. length
c	4	Bolt, machine, $\frac{5}{8}$ " x req'd. length	u	$\frac{1}{2}$	Clamp, guy, 3-bolt, 6" long
d	22	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ " x $\frac{13}{16}$ " hole	aa	4	Nut, eye $\frac{5}{8}$ "
f	2	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "	ap	3	Clamp, hot line, tap assembly
g	3	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 8'-0" lg.	aq		Jumpers
h	6	Brace, $1\frac{1}{4}$ " x $\frac{1}{4}$ " x 28"	bs	1	Bolt, single upset, insulated
i	6	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "	ca	3	Deadend assembly, primary
j	3	Screw, lag, $\frac{1}{2}$ " x 4"	cc	2	Deadend assembly, neutral
k	6	Insulator, suspension	cj	1	Ground wire assembly and rod
p		Connectors, as req'd.			
			KV. PRIMARY, 3-PHASE 4-WIRE STAR		
			CROSSARM CONSTR.-1-PHASE AND 2-PHASE TAPS AT 0° TO 5° ANGLE		
			Scale: $\frac{1}{2}$ " = 1'-0"		
			Date: Feb. 14, 1948		
NO.	REVISION	DATE	C27R1		



ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
a	5	Insulator, pin type	n	6	Bolt, double arming, $\frac{5}{8}$ " x req'd. lgth.
b	2	Pin, pole top, 15"	o	1	Bolt, eye, $\frac{5}{8}$ " x req'd. length
c	4	Bolt, machine, $\frac{5}{8}$ " x req'd. length	p		Connectors, as req'd.
d	24	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ " x 13/16" hole	u	$\frac{1}{2}$	Clamp, guy, 3-bolt, 6" long
f	3	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "	cc	2	Deadend assembly, neutral
g	3	Crossarm, $3\frac{1}{2}$ x $4\frac{1}{2}$ x 8'-0" lg.	ap	3	Clamp, hot line, tap assembly
h	6	Brace, $1\frac{1}{4}$ " x $1\frac{1}{4}$ " x 28"	cj	1	Ground wire, assembly and rod
i	6	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "	bo	1	Shackle, anchor
j	3	Screw, lag, $\frac{1}{2}$ " x 4"	bs	1	Bolt, single upset, insulated
k	4	Insulator, suspension	ca	2	Deadend assembly, primary
aa	5	Nut, eye $\frac{3}{8}$ "	<b>KV. PRIMARY 3-PHASE 4-WIRE STAR CROSSARM CONSTR-1-PHASE AND 3-PHASE TAPS AT 0 TO 5 ANGLE</b>		
aq		Jumpers			
			Scale: $\frac{1}{2}$ " = 1'-0"		
			Date: Mar. 11, 1949		
No.	REVISION		DATE		C28R1



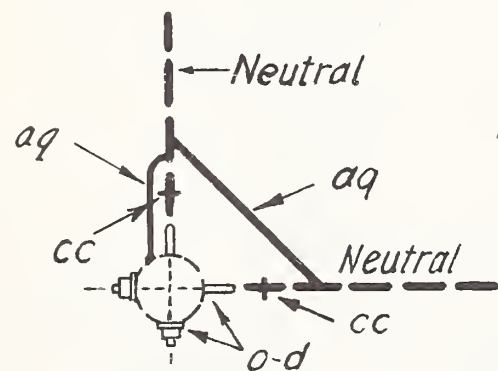
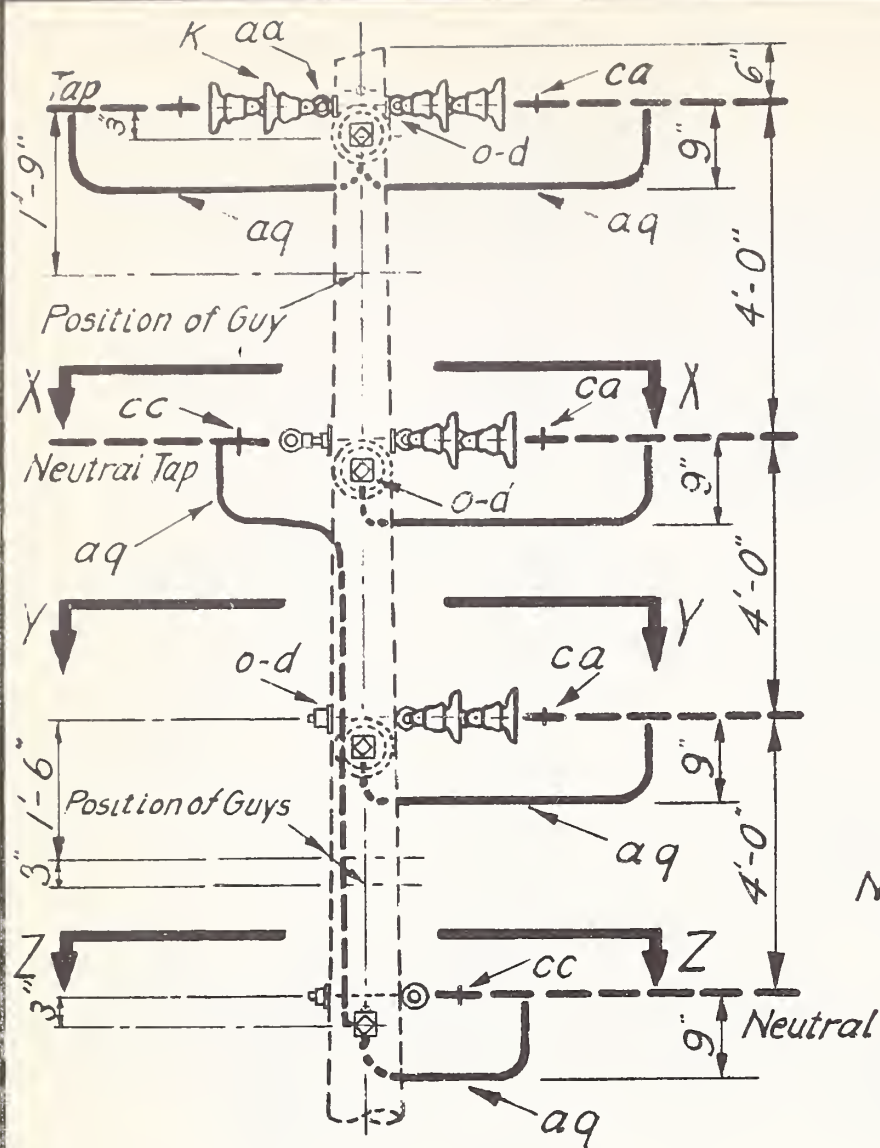
ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
a	6	Insulator, pin type	p		Connectors as req'd.
b	2	Pin, pole top, 1 5"	u	1/2	Clamp, guy, 3-bolt, 6" long
c	5	Bolt, machine, 5/8" x req'd. length	ap	3	Clamp, hotline, tap assembly
d	8	Washer, 2 1/4" x 2 1/4" x 3/16", x 13/16" hole	aq		Jumpers
f	4	Pin, crossarm, steel, 5/8" x 10 3/4"	bo	1	Shackle, anchor
g	2	Crossarm, 3 1/2" x 4 1/2" x 8'-0" lg.	bs	2	Bolt, single upset, insulated
h	4	Brace, 1 1/4" x 1/4" x 28"	ca	3	Nut, eye
i	4	Bolt, carriage, 3/8" x 4 1/2"	ca	1	Dead end assembly, primary
j	2	Screw, lag, 1/2" x 4"	n	1	Bolt double arming, 5/8" x req'd. length
k	2	Insulator, suspension	cj	1	Ground wire assembly and rod

-----KV. PRIMARY 3-PHASE 4-WIRE STAR  
CROSSARM CONSTR 2-PHASE AND 3-PHASE TAPS AT 0 TO 5° ANGLE

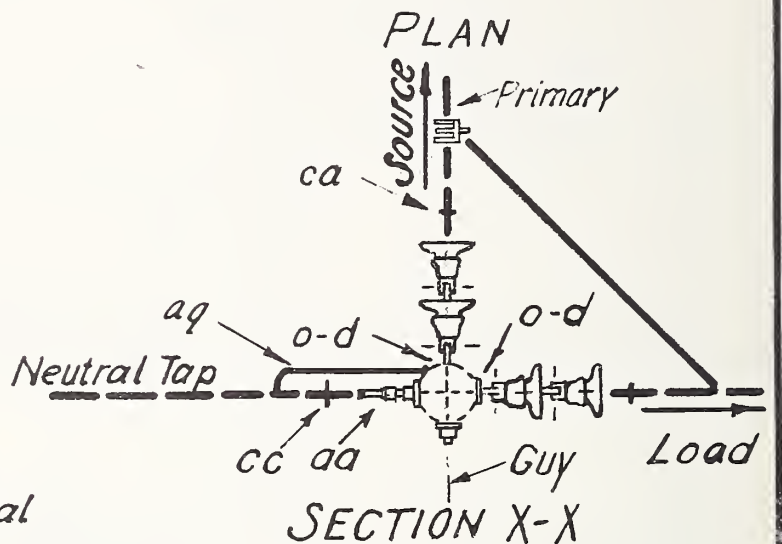
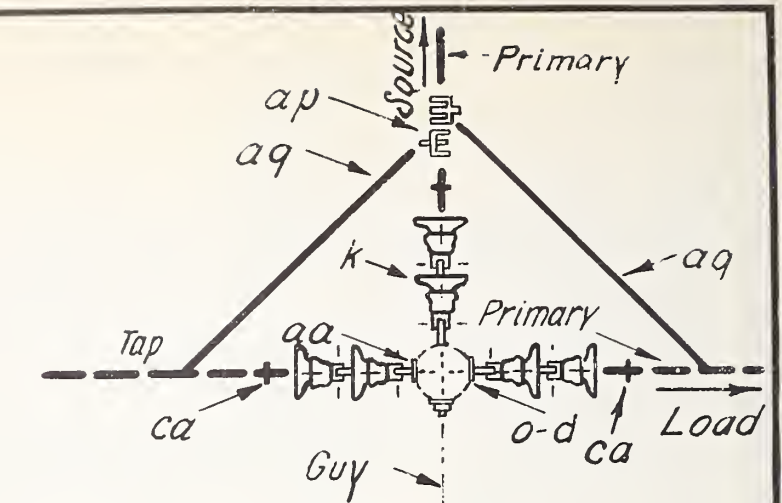
Scale: 1/2" = 1'-0"

Date: Mar. 9, 1949

NO	REVISION	DATE:	C29R
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SECTION Z-Z



SECTION Y-Y

ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
d	10	Washer, 2 1/4 x 2 1/4 x 3/16, 13/16 hole	aq		Jumpers
k	14	Insulator, suspension	ca	7	Deadend assembly, primary
o	8	Bolt, eye, 5/8 x req'd. length	cc	3	Deadend assembly, neutral
aa	2	Nut, eye, 5/8	ap	4	Clamp, hot line, tap assembly
p		Connectors, as req'd.			

----- K.V. PRIMARY, 3-PHASE 4-WIRE STAR  
VERTICAL CONSTR.-SINGLE-PHASE TAP AT 60° TO 90° ANGLE

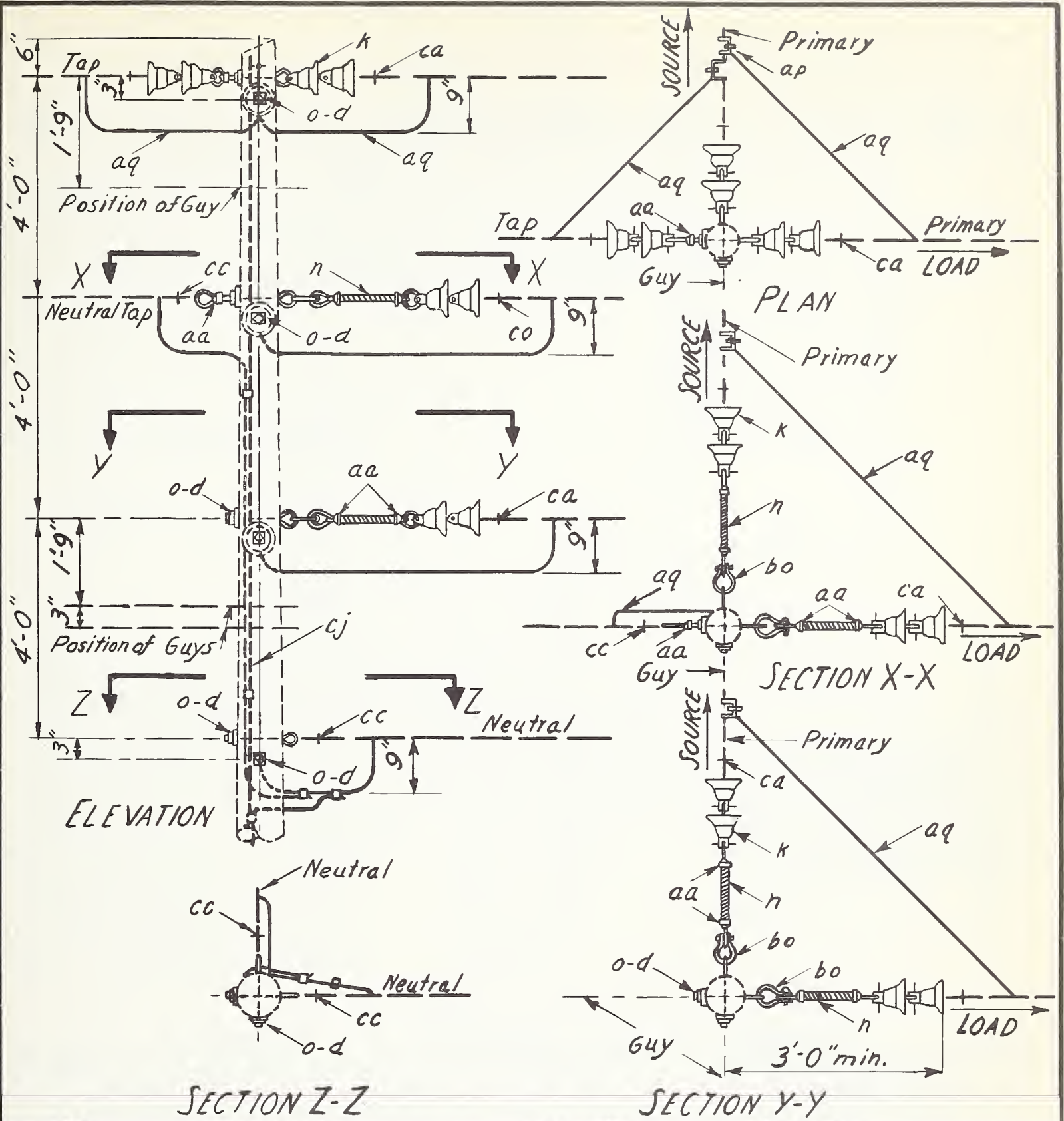
Scale: 1/2" = 1'-0"

Date:

1. Changed neutral tap 7/29/48

NO. REVISION DATE

C30R



ITEM	NO. REQ'D.	MATERIAL	ITEM	NO. REQ'D.	MATERIAL
d	8	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	ap	4	Clamp, hot line, tap assembly
k	14	Insulator, suspension	aq		Jumpers
n	4	Bolt, double arming, 5/8" x req'd. lenth.	bo	4	Shackle, anchor
o	8	Bolt, eye 5/8" x req'd. length	ca	7	Deadend assembly, primary
p		Connectors, as req'd.	cc	3	Deadend assembly, neutral
aa	10	Nut, eye, 5/8"	cj	1	Ground wire assembly and rod

KV. PRIMARY, 3-PHASE 4-WIRE STAR

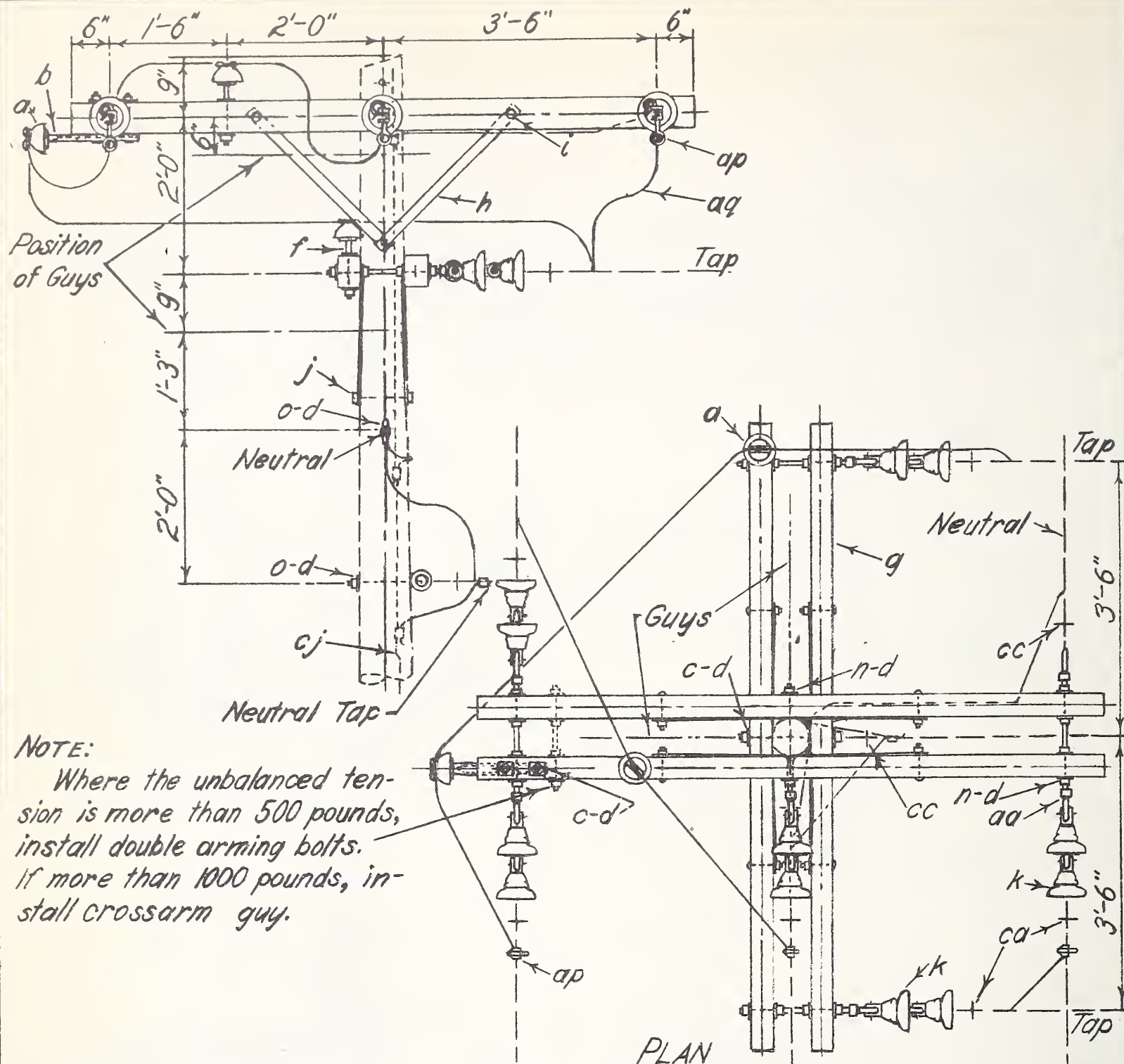
VERTICAL CONSTR. - SINGLE-PHASE TAP AT 60° TO 90° ANGLE

Scale: 1/2" = 1'-0"

Date: Mar. 18, 1949

No.	REVISION	DATE:

C 30-1



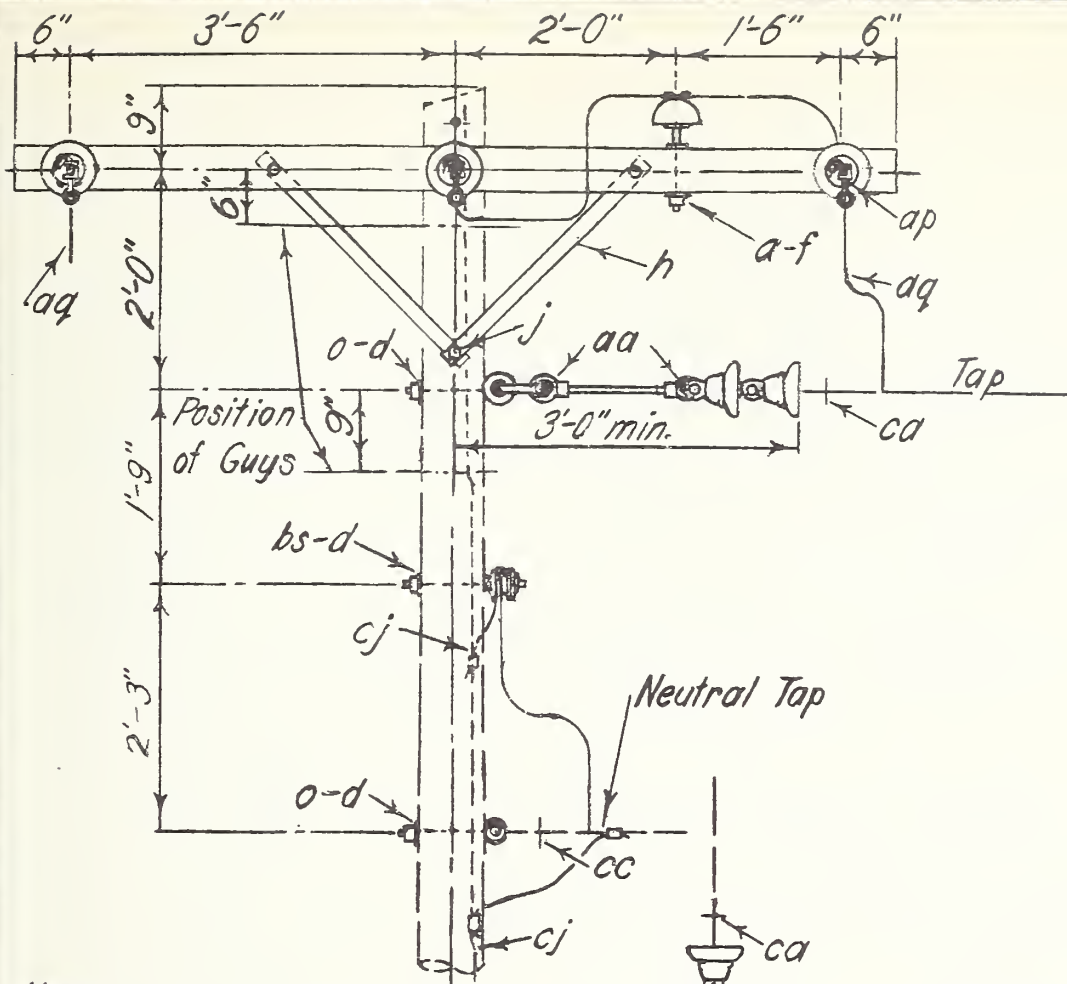
ITEM	NO. REQ'D.	MATERIAL	ITEM	NO. REQ'D.	MATERIAL
a	3	Insulator, pin type	n	5	Bolt, double arming, $\frac{5}{8}$ " x req'd. lgth.
b	1	Pin, pole top, 15"	o	2	Bolt, eye, $\frac{5}{8}$ " x req'd. length
c	3	Bolt, machine, $\frac{5}{8}$ " x req'd. length	p		Connectors, as req'd.
d	24	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{3}{16}$ " hole	aa	7	Nut, eye, $\frac{5}{8}$ "
f	2	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "	ap	3	Clamp, hot line, tap assembly
g	4	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 8'-0"	aq		Jumpers
h	8	Brace, flat, $1\frac{1}{4}$ " x $\frac{1}{4}$ " x 28"	ca	6	Deadend assembly, primary
i	8	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}$ "	cc	3	Deadend assembly, neutral
j	4	Screw, lag, $\frac{1}{2}$ " x 4"	cj		Ground wire assembly and rod
k	12	Insulator, suspension			

— — — KV. PRIMARY, 3-PHASE, 4-WIRE STAR  
CROSSARM CONSTR., SINGLE-PHASE CONTINUING, 2-PHASE TAP

Scale:  $\frac{1}{2}$ " = 1'-0"

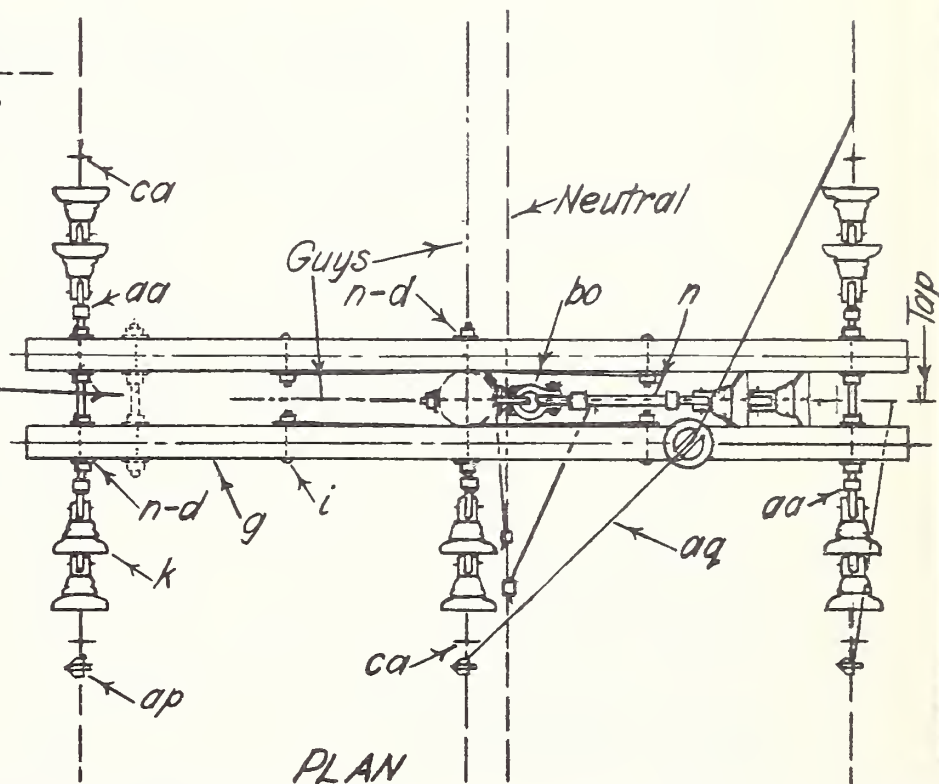
Date: Feb. 7, '49

NO	REVISION	DATE	C41R
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**NOTE:**

Where the unbalanced tension due to change in wire size is more than 500 pounds, install double arming bolts. If more than 1000 pounds, install crossarm guy. If no change in wire size, conductor may be carried through on pin insulators.



PLAN

ITEM	NO REQ'D.	MATERIAL	ITEM	NO REQ'D.	MATERIAL
a	1	Insulator, pin type	o	2	Bolt, eye, $\frac{5}{8}$ " x req'd. length
d	13	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{3}{16}$ " hole	p		Connectors, as req'd.
f	1	Pin, crossarm, steel, $\frac{3}{8}$ " x $10\frac{1}{4}$ "	aa	7	Nut, eye, $\frac{5}{8}$ "
g	2	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x $8'-0"$	ap	3	Clamp, hot line, top assembly
h	4	Brace, flat, $1\frac{1}{4}$ " x $\frac{1}{4}$ " x $28"$	aq		Jumpers
i	4	Bolt, carriage, $\frac{3}{8}$ " x $4\frac{1}{2}"$	bo	1	Shackle, anchor
j	2	Screw, lag, $\frac{1}{2}"$ x $4"$	bs	1	Bolt, single upset, insulated
k	12	Insulator, suspension	ca	6	Deadend assembly, primary
n	4	Bolt, double arming, $\frac{5}{8}"$ x req'd. lgth.	cc	1	Deadend assembly, neutral
cj		Ground wire assembly and rod			

\_\_\_\_KV. PRIMARY, 3-PHASE, 4-WIRE STAR

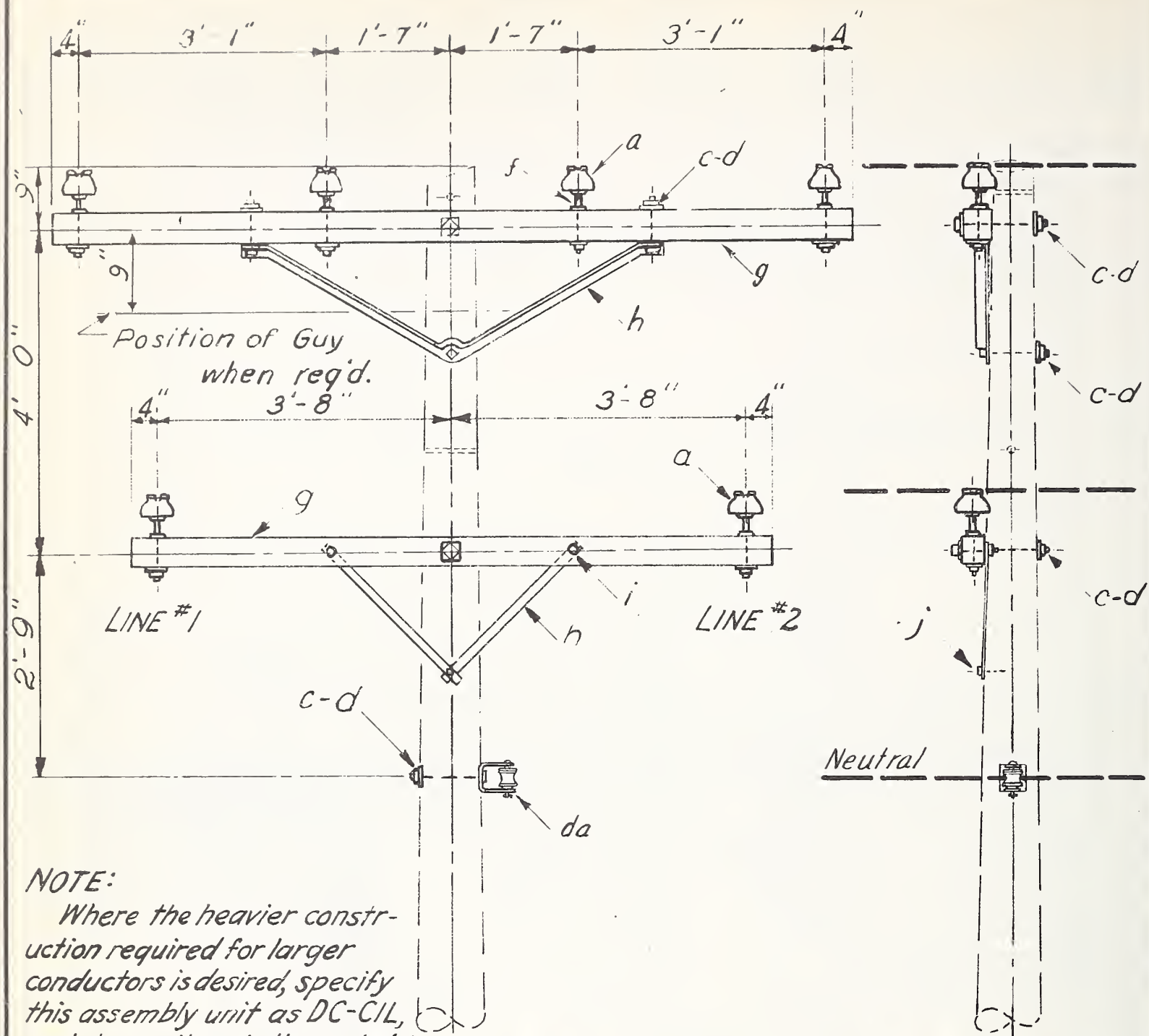
CROSSARM CONSTR.: TWO-PHASE CONTINUING, SINGLE-PHASE TAP

Scale:  $\frac{1}{2}" = 1'-0"$

Date: Feb. 2, '49

NO	REVISION	Date
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C42R



ELEVATION

SIDE ELEVATION

ITEM	N <sup>o</sup> REQ'D	MATERIAL	ITEM	N <sup>o</sup> REQ'D	MATERIAL
a	6	Insulator, pin type	g	1	Crossarm, 3 1/2" x 4 1/2" x 8'-0"
c	4	Bolt, machine, 5/8" x req'd. lg h.	h	1	Brace, angle, 1 1/2" x 1 1/2" x 3/16", 60" span
c	2	Bolt, machine, 1/2" x req'd. lg h.	h	2	Brace, 1 1/4" x 1/4" x 28" long
d	6	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	i	2	Bolt, carriage, 3/8" x 4 1/2"
d	2	Washer, 1 3/8" diam, 9/16" hole	j	1	Screw, lag 1/2" x 4"
f	6	Pin, crossarm, steel, 5/8" x 10 3/4"	da	1	Bracket, insulated
g	1	Crossarm, 3 3/4" x 4 3/4" x 10'-0"			

--- K.V. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTRUCTION - DOUBLE CIRCUIT.  
SINGLE PRIMARY SUPPORT AT 0° TO 5° ANGLE.

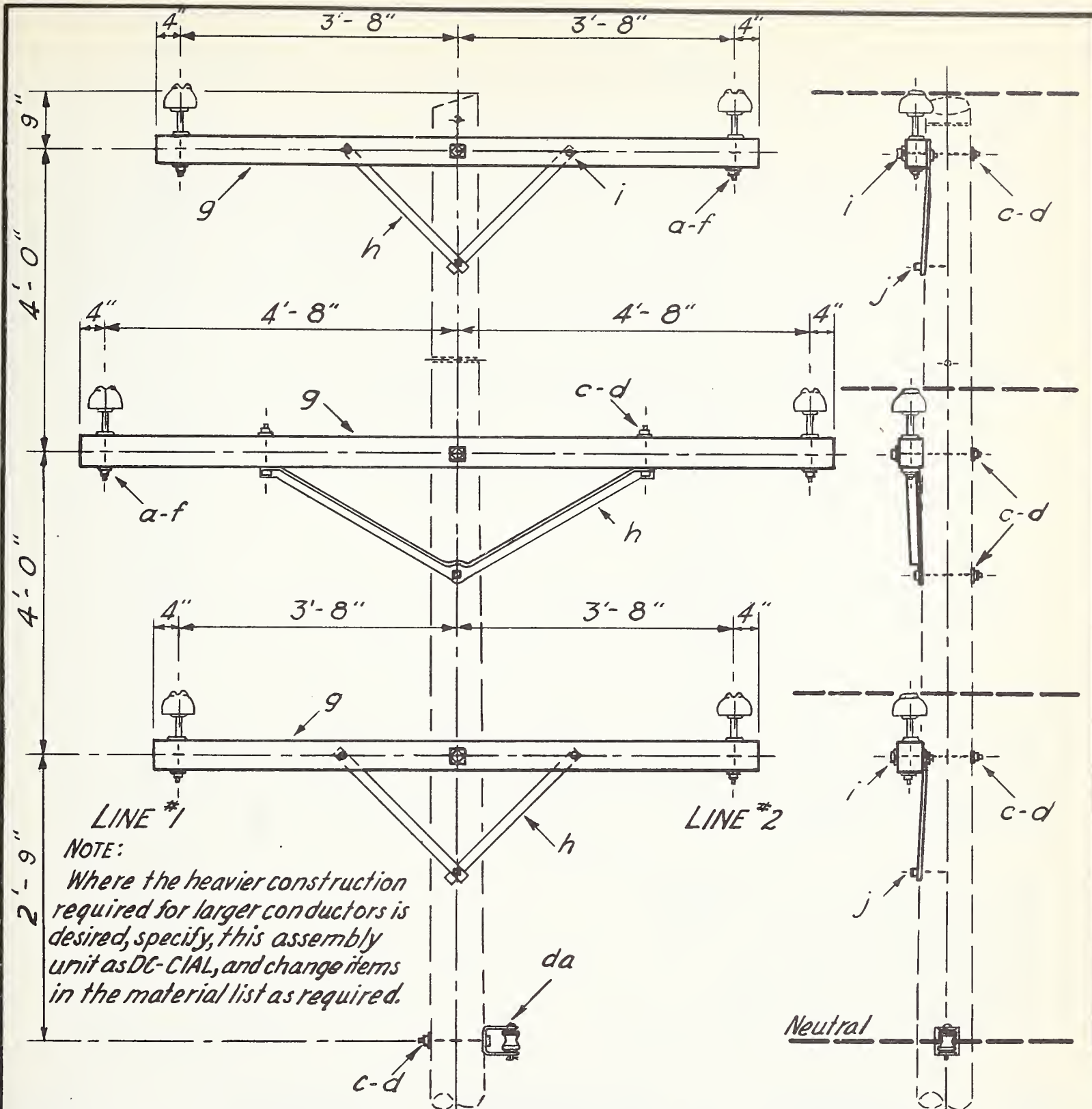
Scale 1/2"=1'-0"

2 X-ARM TYPE

Date: Sept. 25, '46

No. REVISION DATE

DC-C1



ITEM	Nº REQD	MATERIAL	ITEM	Nº REQD	MATERIAL
a	6	Insulator, pin type	g	2	Crossarm, 3½"x4½"x8'-0" long
c	5	Bolt, machine, 5/8"x req'd. length	h	1	Brace, angle, 1½"x1½"x 3/16", 60"sp.
c	2	Bolt, machine, 1/2"x req'd. length	h	4	Brace, flat, 1/4"x1 1/4"x28" long
d	8	Washer, 2 1/4"x2 1/4"x 3/16", 13/16" hole	i	4	Bolt, carriage, 3/8"x4 1/2"
d	2	Washer, round, 1 3/8" diam, 9/16" hole	j	2	Screw, lag, 1/2"x4"
f	6	Pin, crossarm, steel, 5/8"x10 3/4"	da	1	Bracket, insulated
g	1	Crossarm, 3 3/4"x4 3/4"x10'-0" long			

---KV. PRIMARY, 3 PHASE 4-WIRE STAR  
CROSSARM CONSTRUCTION-DOUBLE CIRCUIT  
SINGLE PRIMARY SUPPORT AT 0° TO 5° ANGLE

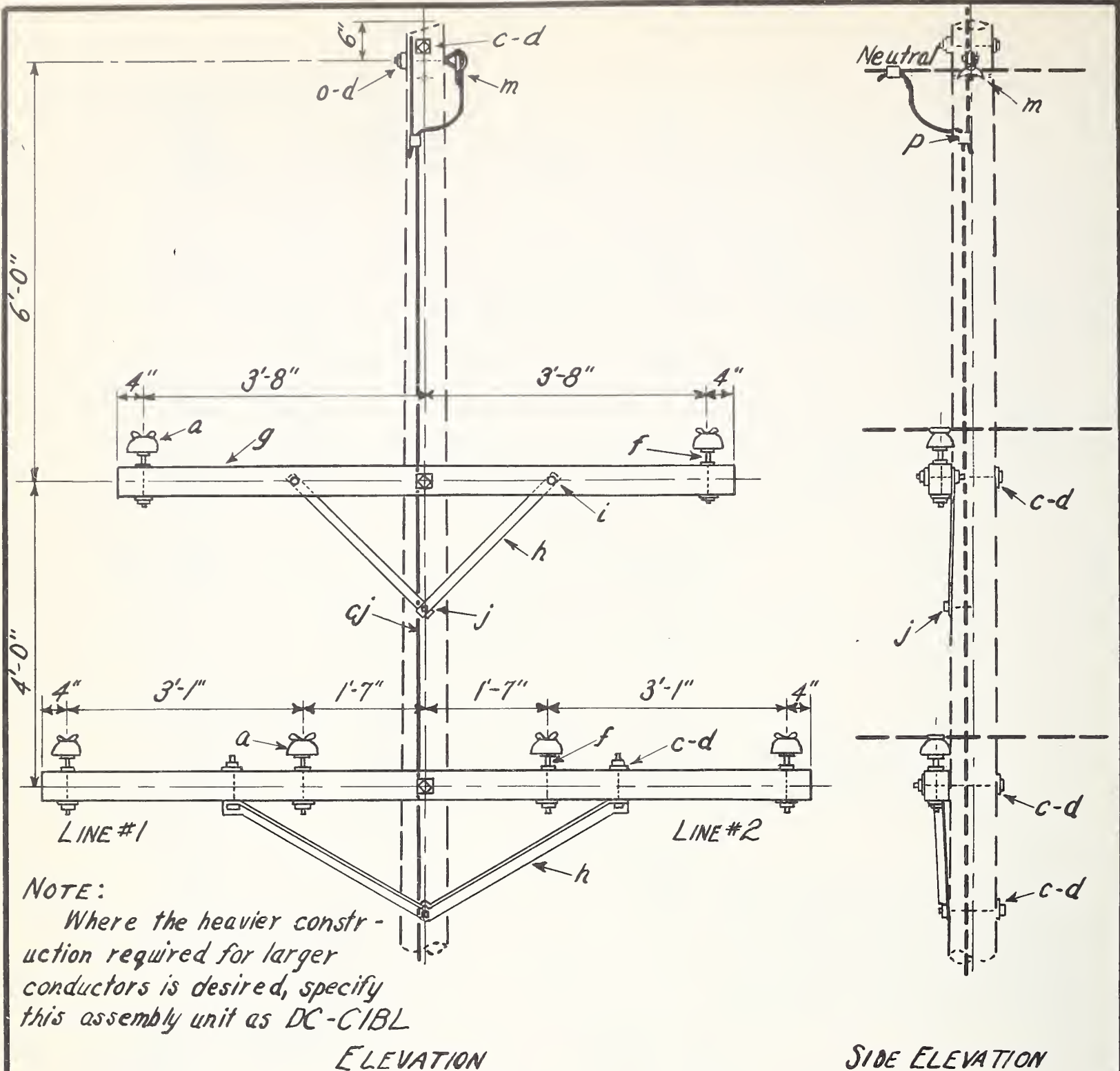
Scale: 1/2"=1'-0"

3 X-ARM TYPE

Date: 2-15-1948

DC-CIA

Nº	REVISION	DATE
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ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
a	6	Insulator, pin type	h	1	Brace, angle, 1/2" x 1/2" x 3/16", 60" span
c	4	Bolt, machine, 5/8" x req'd. length	h	2	Brace, flat, 1/4" x 1/4" x 28"
c	2	Bolt, machine, 1/2" x req'd. length	i	2	Bolt, carriage, 3/8" x 4 1/2"
d	8	Washer, 2 1/4" x 2 1/4" x 3/16", 3/16" hole	j	1	Screw, lag, 1/2" x 4"
d	2	Washer, 1 3/8" dia., 9/16" hole	m	1	Clamp, suspension
f	6	Pin, crossarm, steel, 5/8" x 10 3/4"	o	1	Bolt, eye, 5/8" x req'd. length
g	1	Crossarm, 3 3/4" x 4 1/4" x 10'-0"	p		Connectors, as req'd.
g	1	Crossarm, 3 1/2" x 4 1/2" x 8'-0"	cj		Ground wire assembly and rod

K.V. PRIMARY, 3-PHASE, 4-WIRE STAR  
CROSSARM CONSTRUCTION-DOUBLE CIRCUIT  
SINGLE PRIMARY SUPPORT WITH OVERHEAD GROUND WIRE

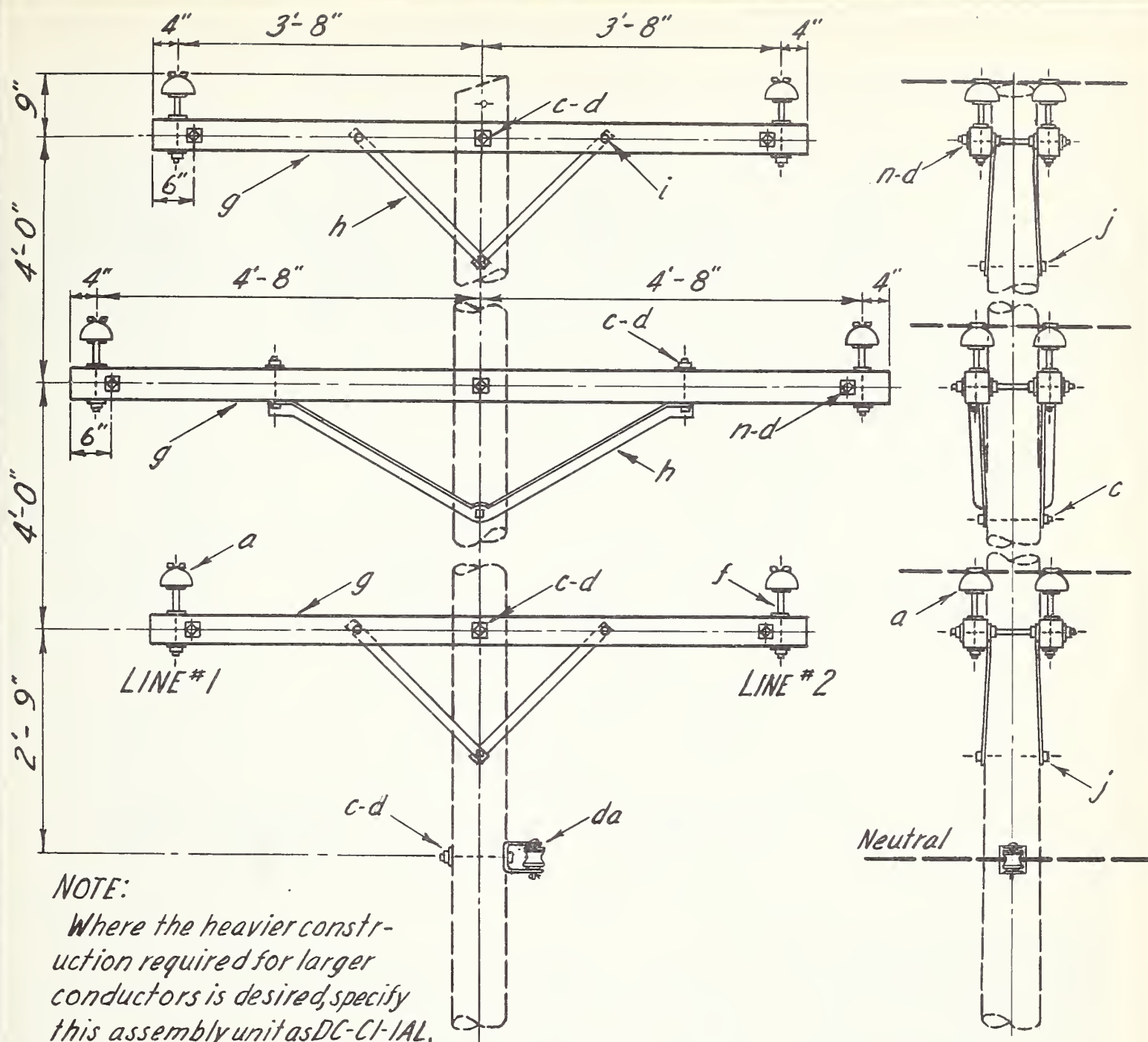
Scale: 1/2"=1'-0"

2X-ARM TYPE

Date: May 3, 49

DC-CIB

No. REVISION DATE



ITEM	NO. REQD.	MATERIAL	ITEM	NO. REQD.	MATERIAL
a	12	Insulator, pin type	g	4	Crossarm, 3½"x4½"x8'-0" long
c	5	Bolt, machine, ⅝"x reqd. length	h	2	Brace, angle, 1½"x1½"x⅜", 60" span
c	4	Bolt, machine, ½"x reqd. length	h	8	Brace, flat, ¼"x1¼"x28" long
d	31	Washer, 2¼"x2¼"x⅜", ⅜" hole	i	8	Bolt carriage, ⅜"x4½"
d	4	Washer, round, 1⅜" diam, ⅜" hole	j	4	Screw, lag, ½"x4"
f	12	Pin, crossarm, steel, ⅝"x10¾"	n	6	Bolt, double arming, ⅝"x reqd. lgth.
g	2	Crossarm, 3¾"x4¾"x10'-0" long	da	1	Bracket, insulated

KV. PRIMARY, 3-PHASE, 4-WIRE STAR  
CROSSARM CONSTRUCTION-DOUBLE CIRCUIT  
DOUBLE PRIMARY SUPPORT AT 0° TO 5° ANGLE

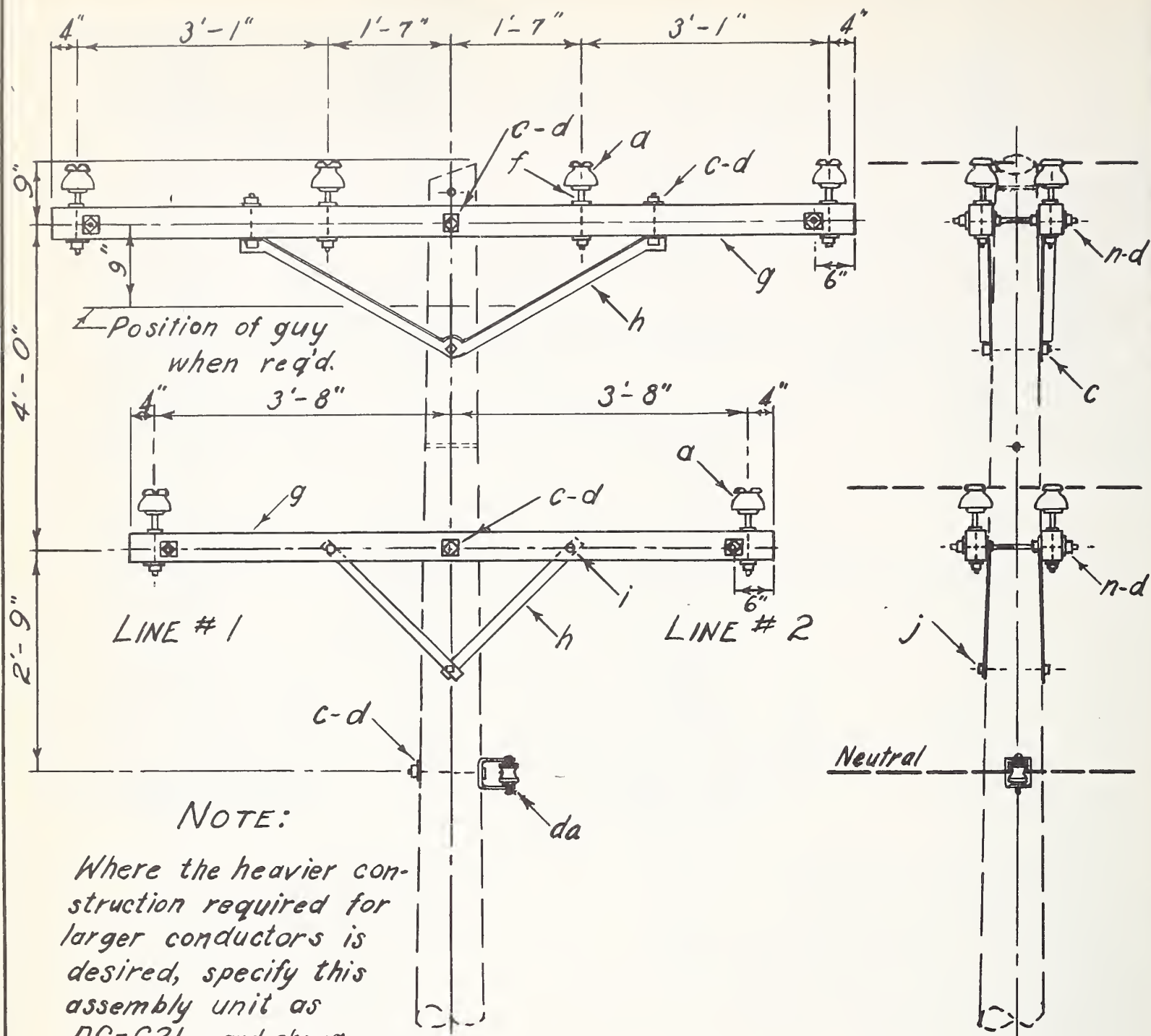
Scale: ½"=1'-0"

3X-ARM TYPE

Date: Jan. 6, 1949

NO. REVISION DATE:

DC-CI-1A



**NOTE:**

Where the heavier construction required for larger conductors is desired, specify this assembly unit as DC-C2L, and change items in the material list as required.

ITEM	Nº REQ'D	MATERIAL	ITEM	Nº REQ'D	MATERIAL
a	12	Insulator, pin type	g	2	Crossarm, 3½" x 4½" x 8'-0" long
c	4	Bolt, machine, ⅝" x req'd length	h	2	Brace, angle, 1½" x ½" x ⅝", 60" span
c	4	Bolt, machine, ½" x req'd length	h	4	Brace, 1¼" x ¼" x 28" long
d	21	Washer, 2¼" x 2¼" x ⅜", ⅜" hole	i	4	Bolt, carriage, ⅜" x 4½"
d	4	Washer, 1⅜" diam., ⅜" hole	j	2	Screw, lag, ½" x 4"
f	12	Pin, crossarm, steel, ⅝" x 10¾"	n	4	Bolt, double arming, ⅝" x req'd length
g	2	Crossarm, 3¼" x 4¼" x 10'-0" long	da	1	Bracket, insulated

----- K<sub>V</sub> PRIMARY, 3-PHASE, 4-WIRE STAR  
CROSSARM CONSTRUCTION-DOUBLE CIRCUIT  
DOUBLE PRIMARY SUPPORT AT 0° TO 5° ANGLE

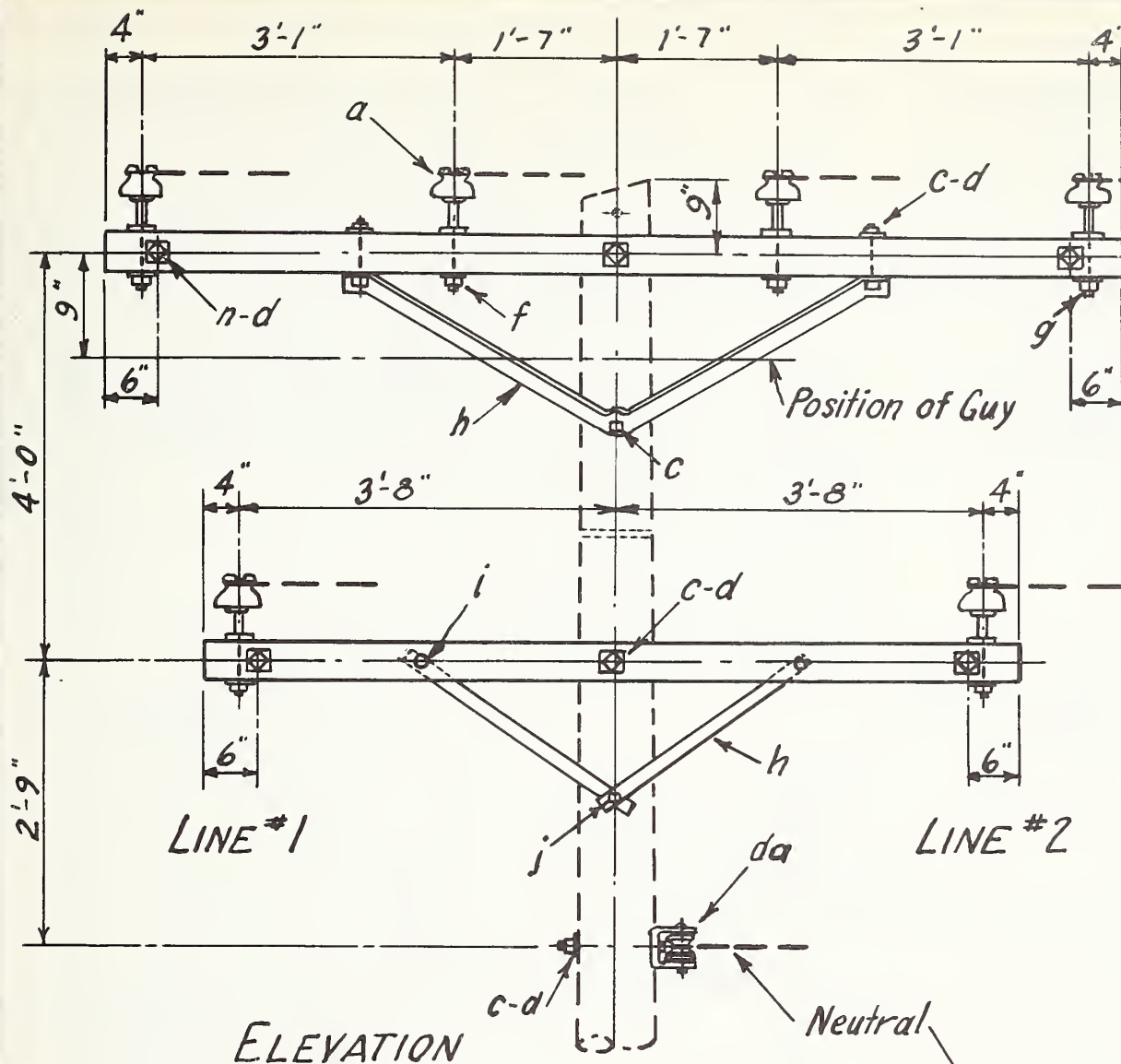
Scale: ½" = 1'-0"

2 X-ARM TYPE

Date: Dec. 28, 1948

Nº REVISION DATE

DC-C2

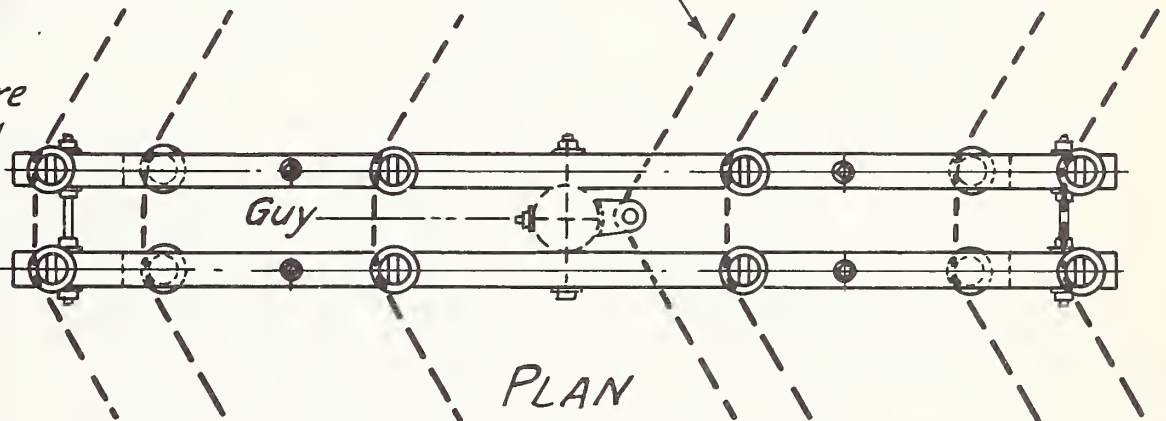


NOTE:

Where the heavier construction required for larger conductors is desired, specify this assembly unit as DC-C2-1L, and change items in the material list as req'd.

NOTE:

For angles of more than 30° use vertical construction on two poles or assemblies similar to Dwg. DC-4CA



ITEM	N <sup>o</sup> REQ'D	MATERIAL	ITEM	N <sup>o</sup> REQ'D	MATERIAL
a	12	Insulator, pin type	h	2	Brace, angle, 1 1/2" x 1 1/2" x 3/16", 60" span
c	4	Bolt, machine, 5/8" x req'd. length	h	4	Brace, flat, 1 1/4" x 1/4" x 28"
C	4	Bolt, machine, 1/2" x req'd. length	i	4	Bolt, carriage, 3/8" x 4 1/2"
d	21	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	j	2	Screw, lag, 1/2" x 4"
d	4	Washer, round, 1 3/8" dia, 9/16" hole	n	4	Bolt, double arming, 5/8" x req'd. length
f	12	Pin, crossarm, steel, 5/8" x 10 3/4"	da	1	Bracket, insulated
g	2	Crossarm, 3 3/4" x 4 3/4" x 10'-0"			
g	2	Crossarm, 3 1/2" x 4 1/2" x 8'-0"			

...KV. PRIMARY, 3-PHASE 4-WIRE STAR  
DOUBLE CIRCUIT  
CROSSARM CONSTRUCTION - 5° TO 30° ANGLE

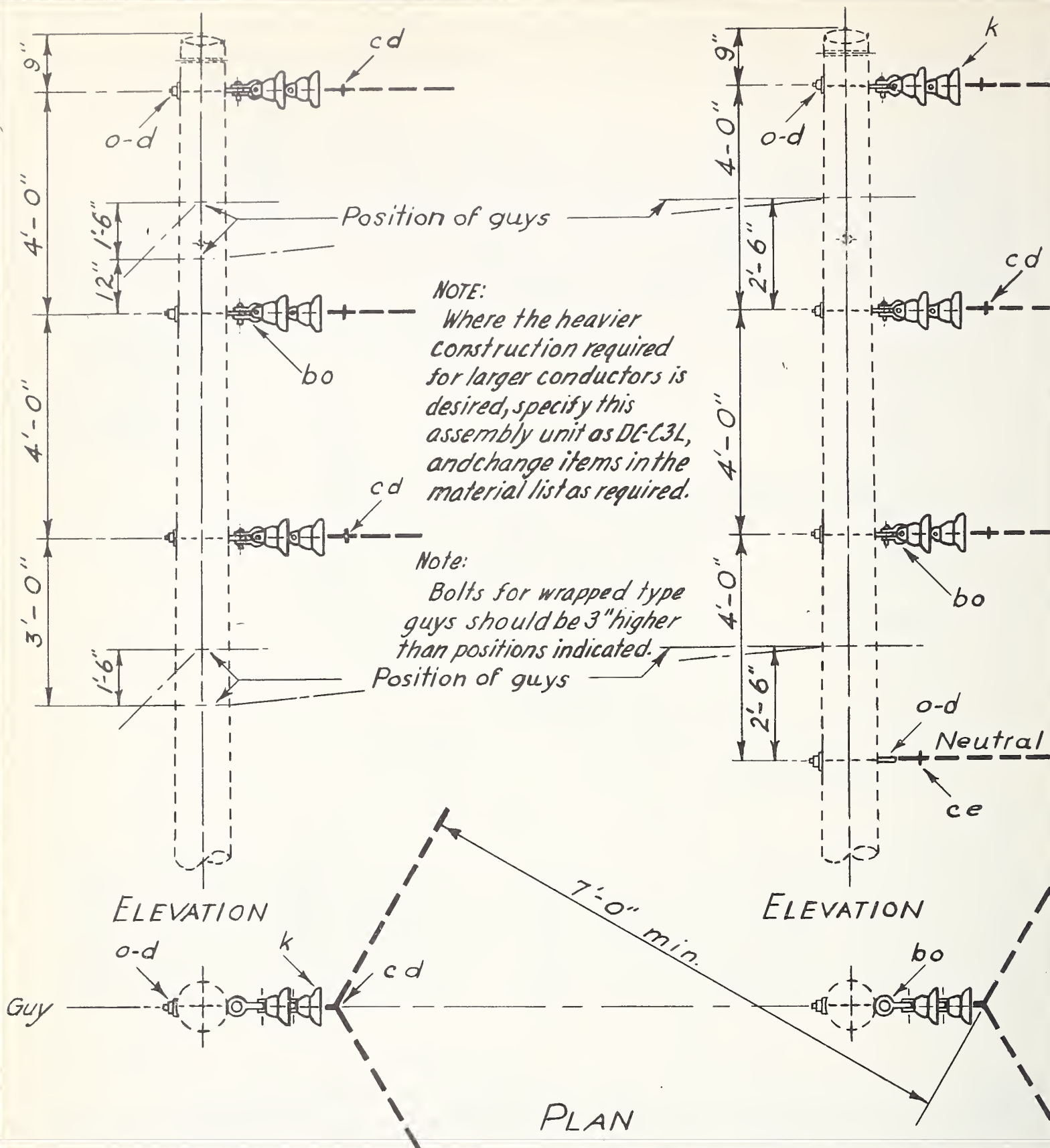
Scale: 1/2" = 1'-0"

2 X-ARM TYPE

Date: June 3, 1948

DC-C2-1

No. REVISION DATE



ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
d	7	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	cd	6	Angle assembly, primary
k	12	Insulator, suspension	ce	1	Angle assembly, neutral
o	7	Bolt, eye, 5/8" x req'd length			
bo	6	Shackle, anchor			

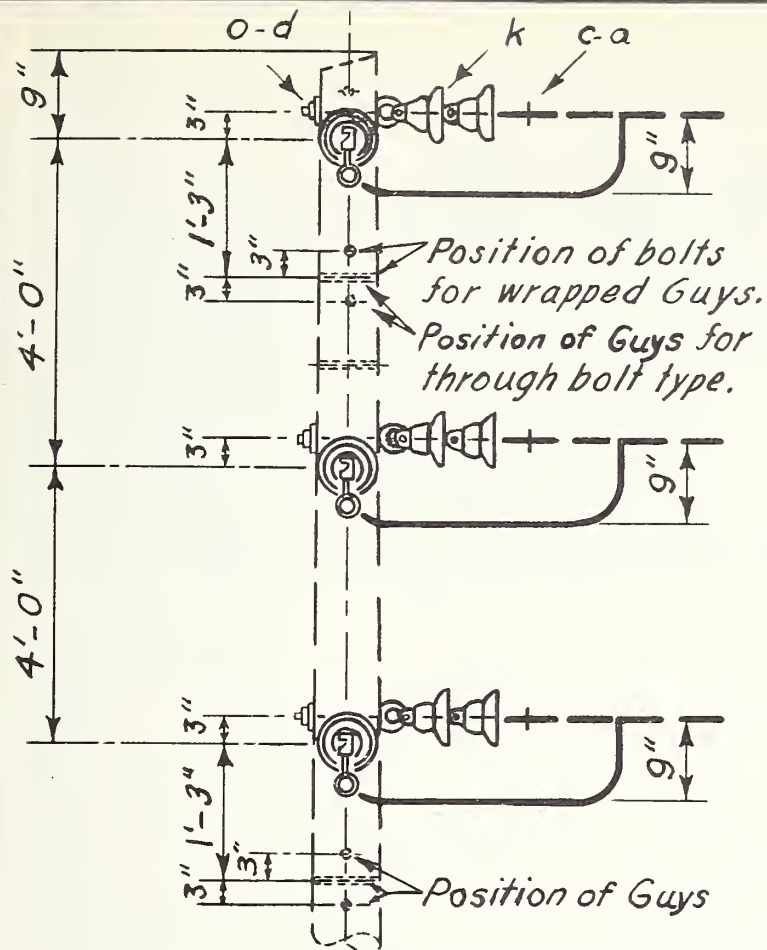
--- KV. PRIMARY, 3-PHASE 4-WIRE STAR  
DOUBLE CIRCUIT.  
VERTICAL CONSTRUCTION - 30° TO 60° ANGLE

Scale: 1/2" = 1'-0"

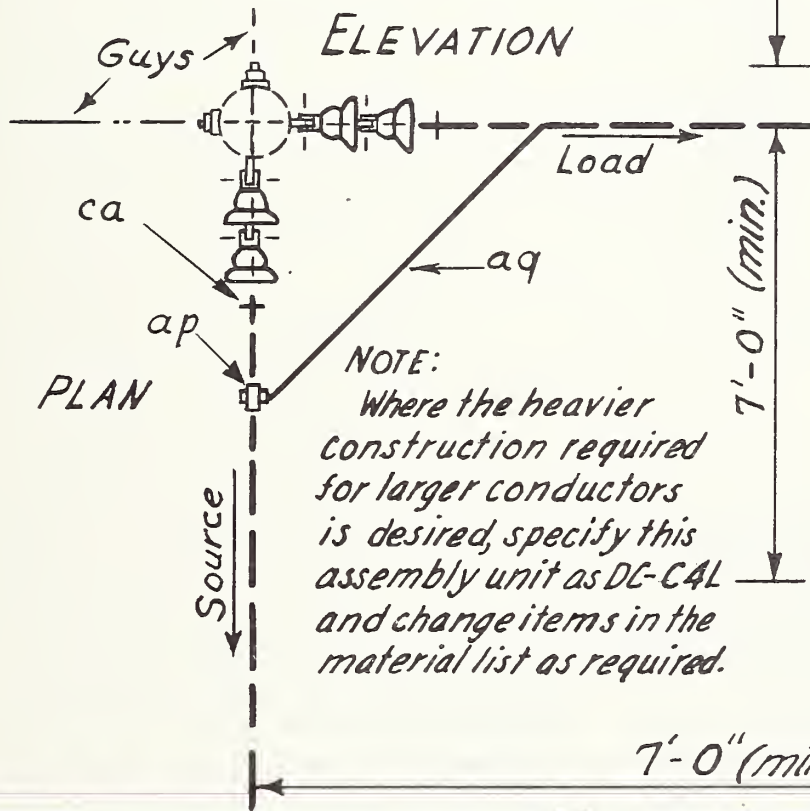
Date: June 4, 1948

No. REVISION DATE

DC-C3

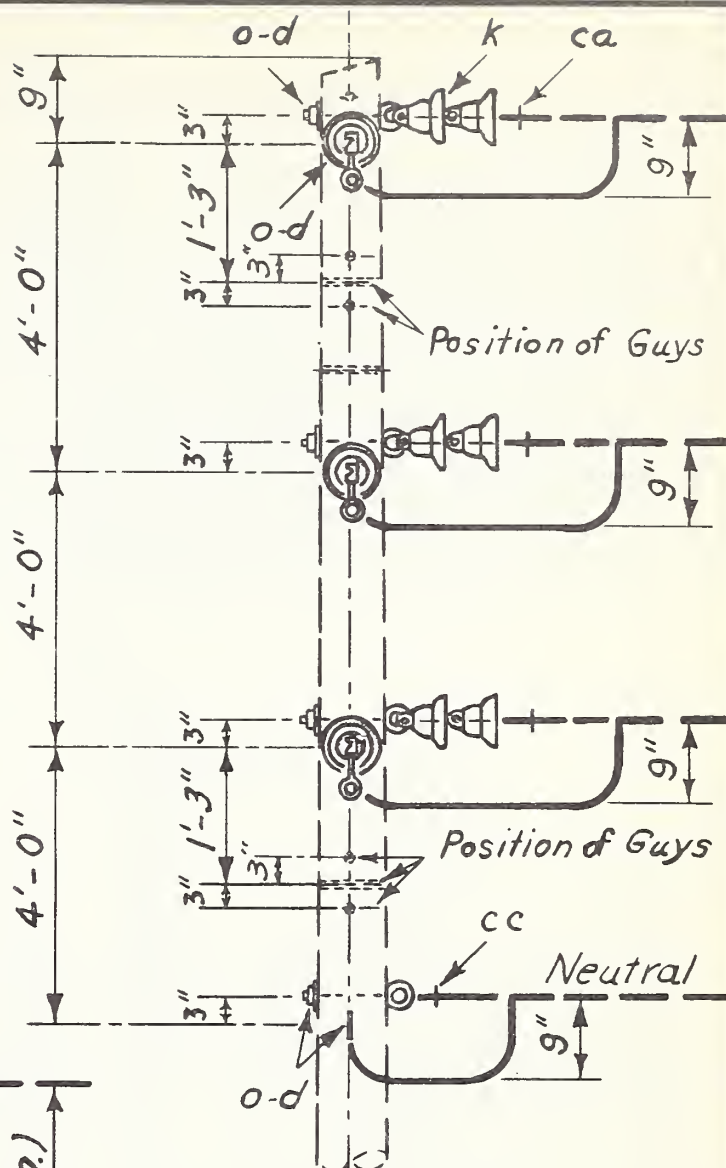


ELEVATION

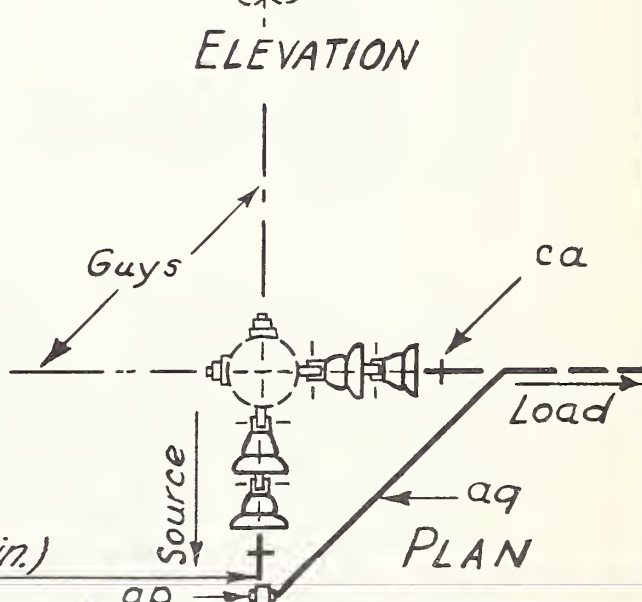


PLAN

NOTE:  
Where the heavier construction required for larger conductors is desired, specify this assembly unit as DC-C4L and change items in the material list as required.



ELEVATION



PLAN

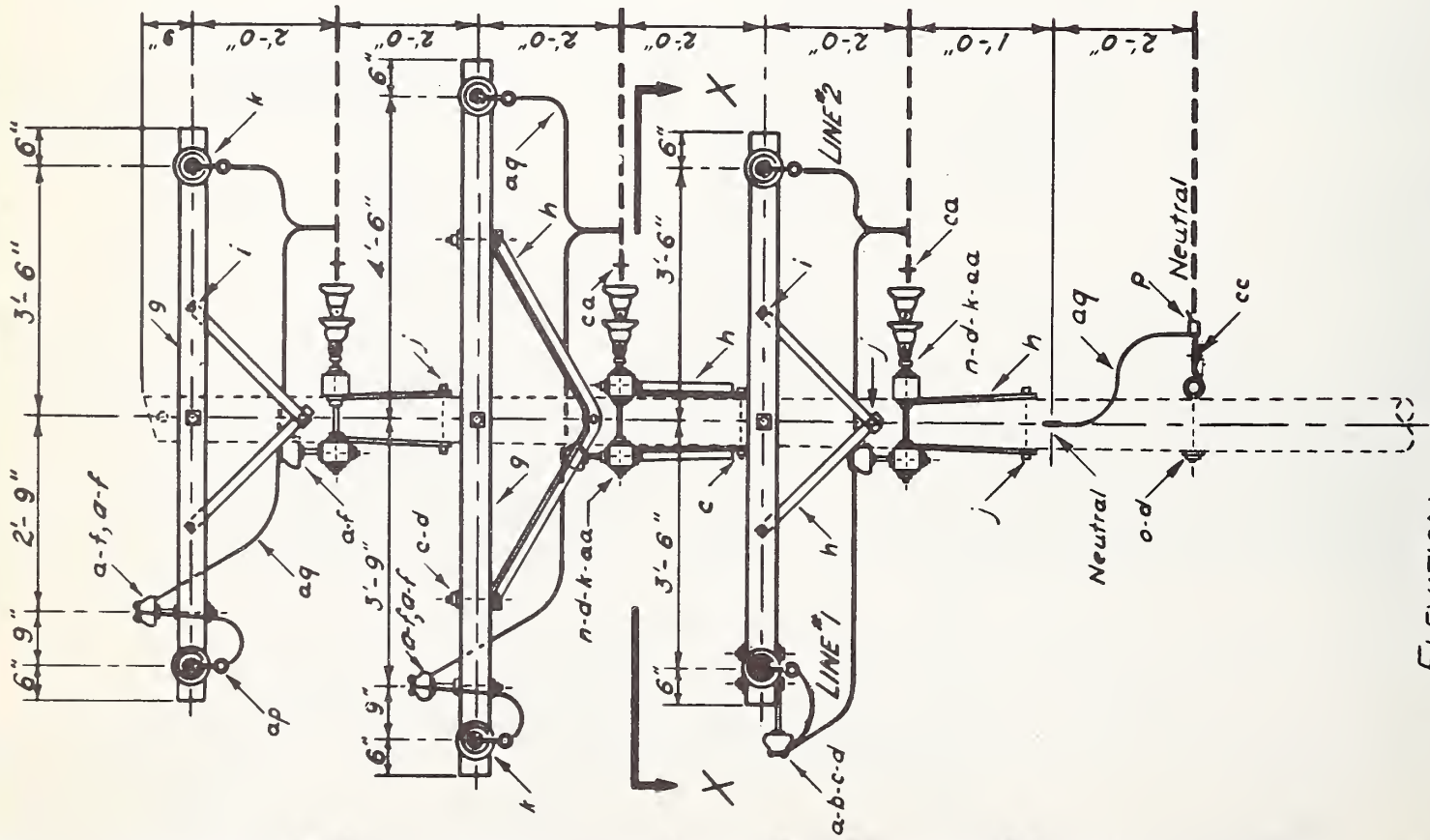
ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
aq		Jumpers	d	14	Washers, 2 1/4" x 2 1/4" x 3/16", 13/16" hole
ap	6	Clamp, hot line, tap assembly	k	24	Insulator, suspension
ca	12	Deadend Assembly, Primary	o	14	Bolt, eye, 5/8" x req'd length
cc	2	Deadend Assembly, Neutral	p		Connectors, as req'd.

--- K V. PRIMARY, 3-PHASE, 4-WIRE STAR  
DOUBLE CIRCUIT  
VERTICAL CONSTR. 60° TO 90° ANGLE

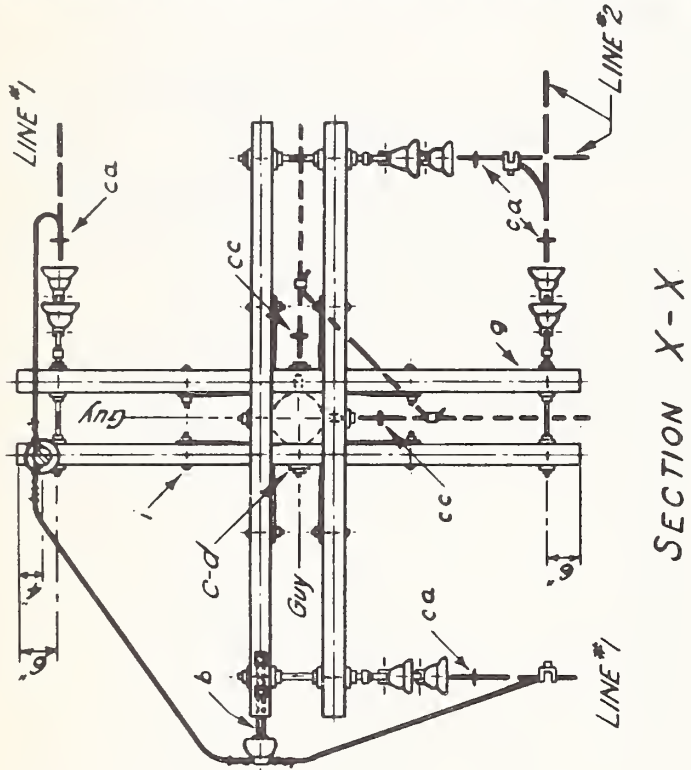
Scale: 1/2" = 1'-0"

Date: June 5, 1948

No.	REVISION	DATE	DC-C4
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ELEVATION



SECTION X-X

ITEM	No.	MATERIAL
a	8	Insulator, pin, type
b	1	Pin, pole top, 15"
c	10	Bolt, machine, 5/8" x reqd. length
d	8	Bolt, machine, 1/2" x reqd. length
e	64	Washer, 2 1/4" x 3/16", 19/16" hole
f	8	Washer, Rd., 1 1/8" Dia., 9/16" hole
g	7	Pin, steel, crossarm, 5/8" x 10 1/4"
h	4	Crossarm, 3 3/4" x 4 3/4" x 10'-0"
i	8	Crossarm, 3 3/4" x 4 3/4" x 8'-0"
j	4	Brace angle, 1 1/2" x 1 1/2" x 3/4" 60° SA
k	16	Brace, flat, 1 1/4" x 1/4" x 28"
l	16	Bolt, carriage, 3/8" x 4 1/2"
m	8	Screw, lag, 1/2" x 4"
n	24	Insulator, suspension
o	12	Bolt, double arming, 5/8" x reqd. length
p	2	Bolt, eye, 5/8" x reqd. length
q		Connectors, as required
r	aa	Nut, eye, 5/8"
s	ap	Clamp, hot line, tap assembly
t	aq	Jumpers
u	ca	Deadend assembly, primary
v	cc	Deadend assembly, neutral

NOTES

1. Construction shown on Dwg DC-C-4 is preferred when practical.
2. Similar construction may be used for 30° to 60° angles if required.
3. Where the heavier construction required for larger conductors is desired, specify this assembly unit as DC-C4AL, and change items in the material list as required.

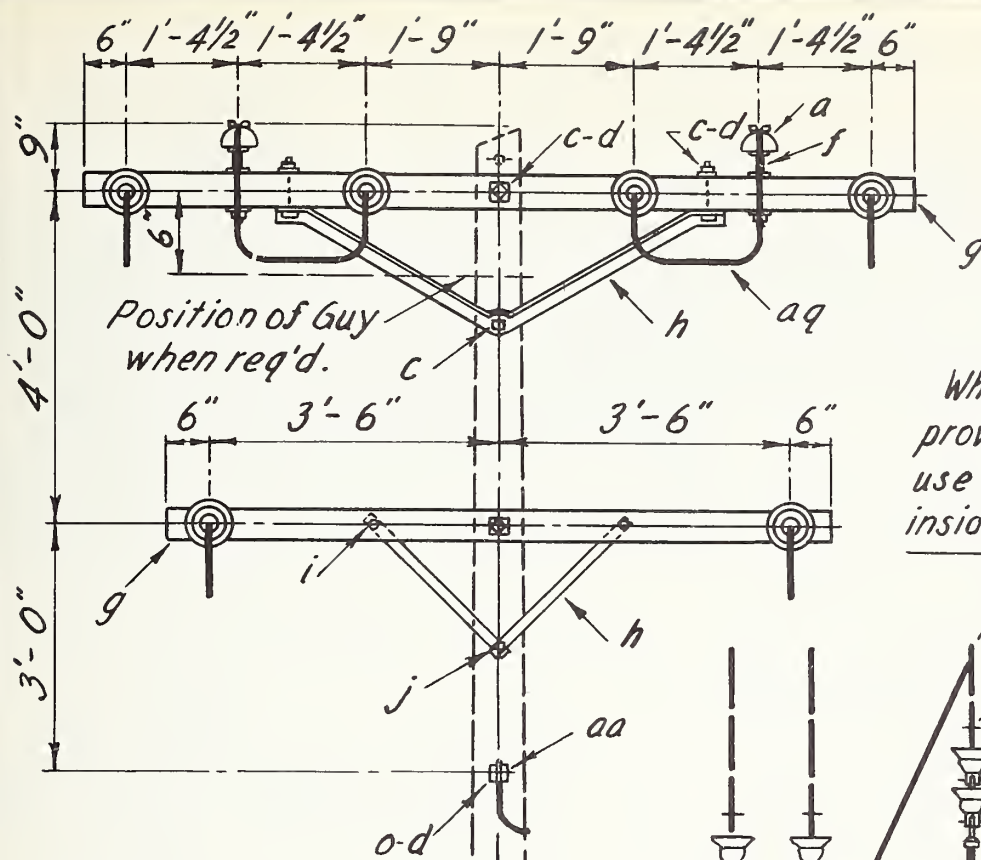
---KV. PRIMARY 3-PHASE 4-WIRE STAR  
(DOUBLE CIRCUIT)  
CROSSARM CONSTRUCTION-60° TO 90° ANGLE

Scale: 1/2"=1'-0"

Date: June 7, 1948

DC-C4A

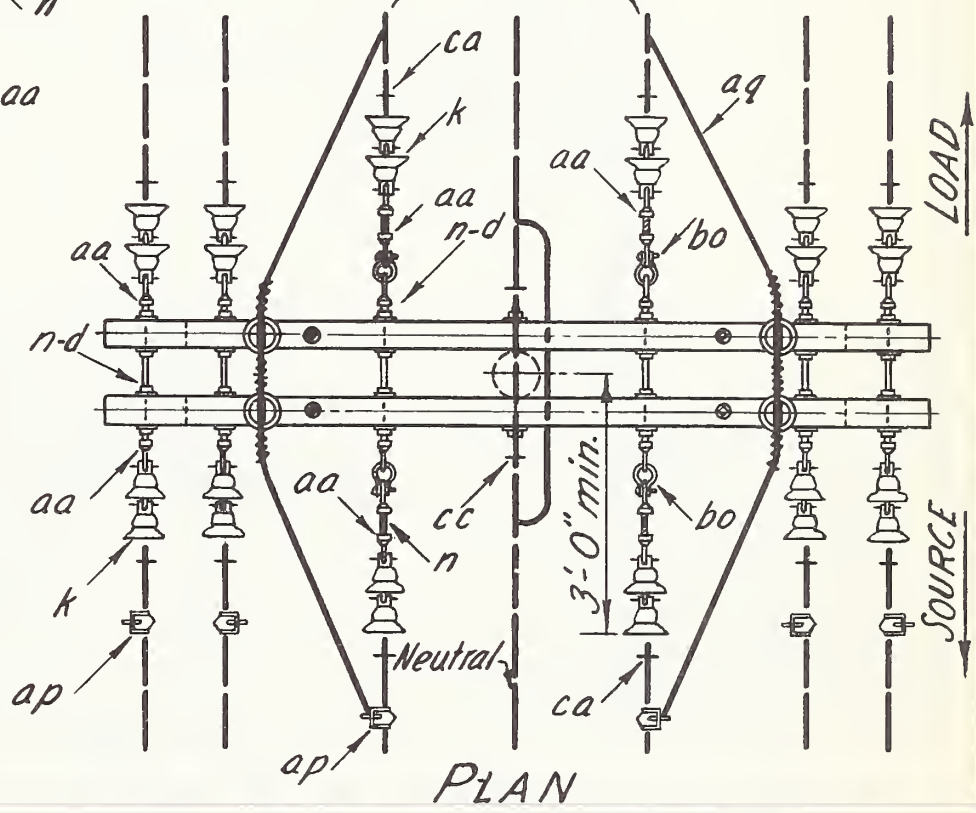
NO.	REVISION	DATE



When climbing space must be provided above these conductors use extended deadends on the inside phase wires.

NOTE:  
Neutral may be carried through if deadending is not required.  
When the line may be energized from either end, hot line clamps should be installed on both ends of the jumpers.

Where the heavier construction for larger conductors is desired, specify this assembly unit as DC-C8L, and change items in the material list as required.



PLAN

ITEM	NO. REQ'D.	MATERIAL	ITEM	NO. REQ'D.	MATERIAL
a	4	Insulator, pin type	j	2	Screw, lag, 1/2" x 4 1/2"
c	3	Bolt, machine, 5/8" x req'd. length	k	24	Insulator, suspension
c	4	Bolt, machine, 1/2" x req'd. length	n	10	Bolt, double arming, 5/8" x req'd. lg'th.
d	29	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	o	1	Bolt, eye, 5/8" x req'd. length
d	4	Washer, round, 1 3/8" dia. 9/16" hole	p		Connectors, as req'd.
f	4	Pin, crossarm, steel, 1 3/8" x 10 3/4"	aa	21	Nut, eye
g	2	Crossarm, 3 3/4" x 4 3/4" x 10'-0" long	ap	6	Clamp, hot line, tap assembly
g	2	Crossarm, 3 1/2" x 4 1/2" x 8'-0" long	aq		Jumpers
h	2	Brace, angle, 1 1/2" x 1 1/2" x 3/16", 60" span	bo	4	Shackle, anchor
h	4	Brace, flat, 1 1/4" x 1/4" x 28" long	ca	12	Deadend assembly, primary
i	4	Bolt, carriage, 3/8" x 4 1/2"	cc	2	Deadend assembly, neutral

KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTRUCTION-DOUBLE CIRCUIT  
DEADEND (DOUBLE)

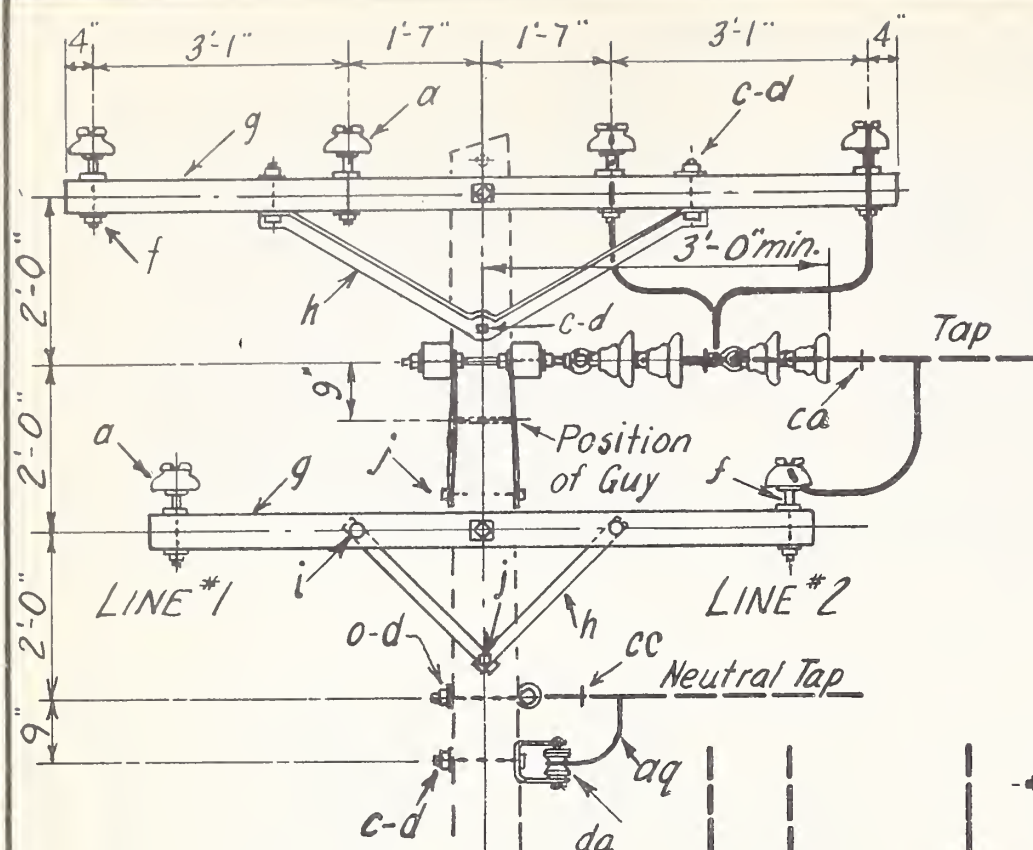
Scale: 3/8" = 1'-0"

2X-ARM TYPE

Date: Dec. 23, 1948

NO.	REVISION	DATE:
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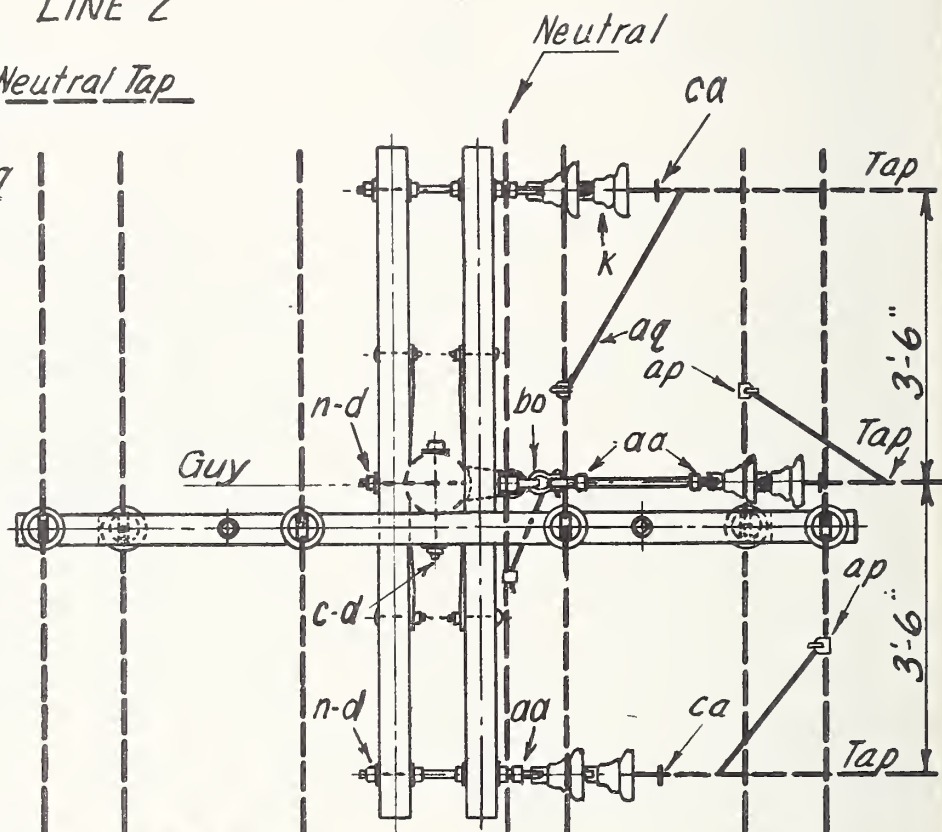
DC-C8



# NOTE:

Where the heavier construction required for larger conductors is desired, specify this assembly unit as DC-C25L and change items in the material list as required.

ELEVATION



PLAN

ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
a	6	Insulator, pin type	j	3	Screw, lag, 1/2"x4"
c	4	Bolt, machine, 5/8"x req'd. length	k	6	Insulator, suspension
c	2	Bolt, machine, 1/2"x req'd. length	n	4	Bolt, double arming, 5/8"x req'd. length
d	17	Washer, 2 1/4"x 2 1/4"x 3/16", 1 3/16" hole	o	1	Bolt, eye, 5/8"x req'd. length
d	2	Washer, round, 1 3/8" dia., 9/16" hole	ca	3	Deadend assembly, primary
f	6	Pin, steel, crossarm, 5/8"x 10 3/4"	aa	5	Nut, eye, 5/8"
g	1	Crossarm, 3 3/4"x 4 3/4"x 10'-0" lg.	ap	3	Clamp, hot line, tap assembly
g	3	Crossarm, 3 1/2"x 4 1/2"x 8'-0" lg.	aq		Jumpers
h	1	Brace, angle, 1 1/2"x 1 1/2"x 3/16", 60" span	bo	1	Shackle, anchor
h	6	Brace, flat, 1 1/4"x 1/4"x 28" lg.	da	1	Bracket, insulated
i	6	Bolt, carriage, 3/8"x 4 1/2"	cc	1	Deadend assembly, neutral
p		Connectors as req'd.			

KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CROSSARM CONSTRUCTION-DOUBLE CIRCUIT  
3-PHASE TAP AT 0° TO 5° ANGLE

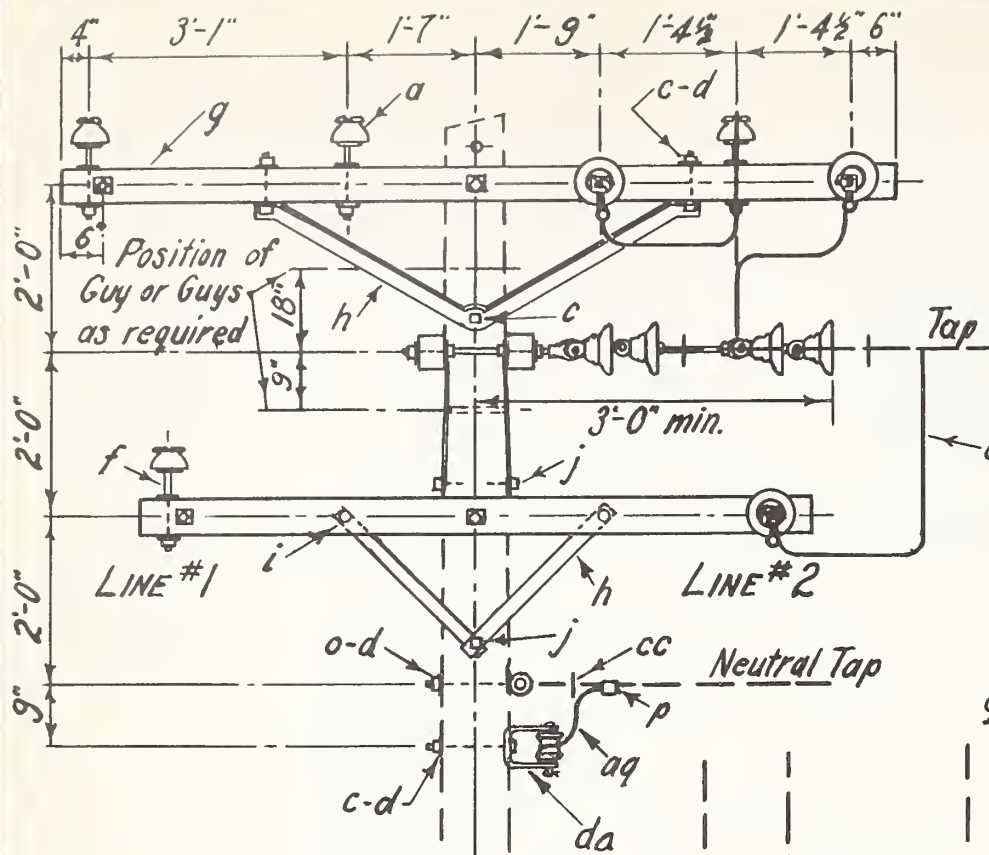
Scale: 3/8"=1'-0"

Date: June 25, 1948

1	MINOR CHANGES	12/10/48
No.	REVISION	DATE

DC-C25

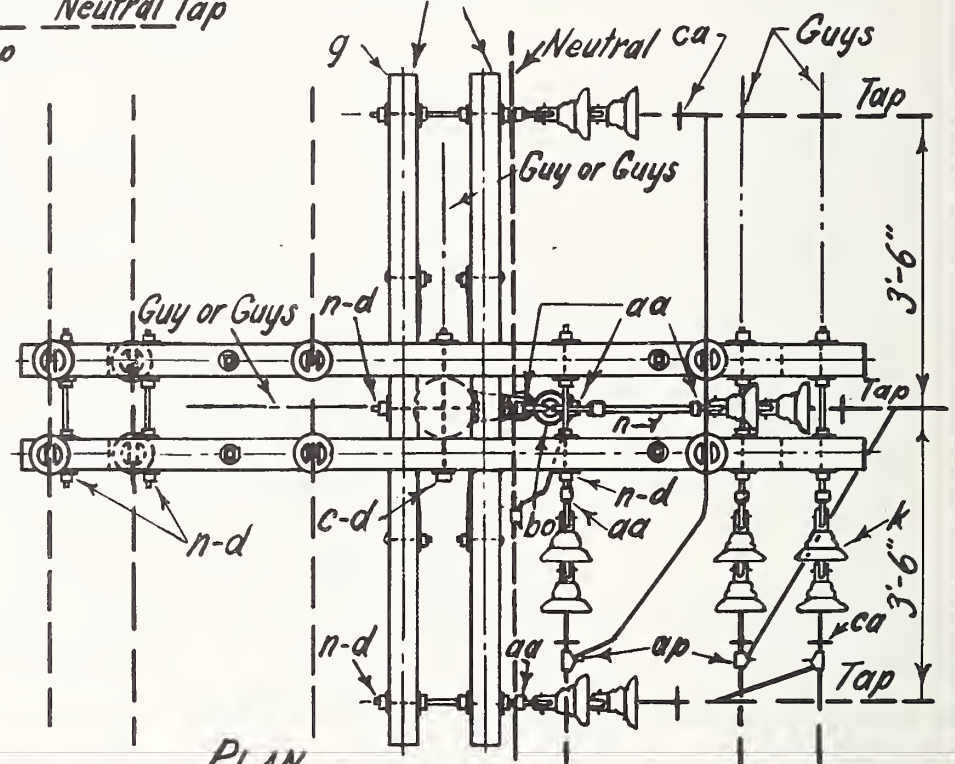




NOTE:

Neutral should be located at the same position on the next pole to provide maximum clearance between neutral and inside phase wire at the point of crossing.

If this assembly is used for *aq* under-build, the inside phase wire may be installed with an extended deadend. When this is done the buckarms should be changed to 10 foot arms.



NOTE:

Where the heavier construction required for large conductors is desired, specify this assembly unit as DC-C50L and change items in material list as required.

ELEVATION

PLAN

ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
a	8	Insulator, pin type	j	4	Screw, lag, 1/2" x 4"
c	4	Bolt, machine, 5/8" x req'd. length	k	12	Insulator, suspension
c	4	Bolt, machine, 1/2" x req'd. length	n	9	Bolt, double arming, 5/8" x req'd. length
d	36	Washer, 2 1/4" x 2 1/4" x 3/16", 3/8" hole	o	1	Bolt, eye, 5/8" x req'd. length
d	4	Washer, round, 1 3/8" dia., 3/16" hole	ca	6	Deadend assembly, primary
f	8	Pin, steel, crossarm, 5/8" x 10 3/4"	aa	8	Nut, eye, 5/8"
g	2	Crossarm, 3 1/4" x 4 1/4" x 10'-0"	ap	3	Clamp, hot line, tap assembly
g	4	Crossarm, 3 1/2" x 4 1/2" x 8'-0"	aq		Jumpers
h	2	Brace, angle, 1 1/2" x 1 1/2" x 3/16", 60" span	bo	1	Shackle, anchor
h	8	Brace, flat, 1 1/4" x 1/4" x 28" long	da	1	Bracket, insulated
i	8	Bolt, carriage, 5/8" x 4 1/2"	cc	1	Deadend assembly, neutral
p		Connectors, as req'd.			

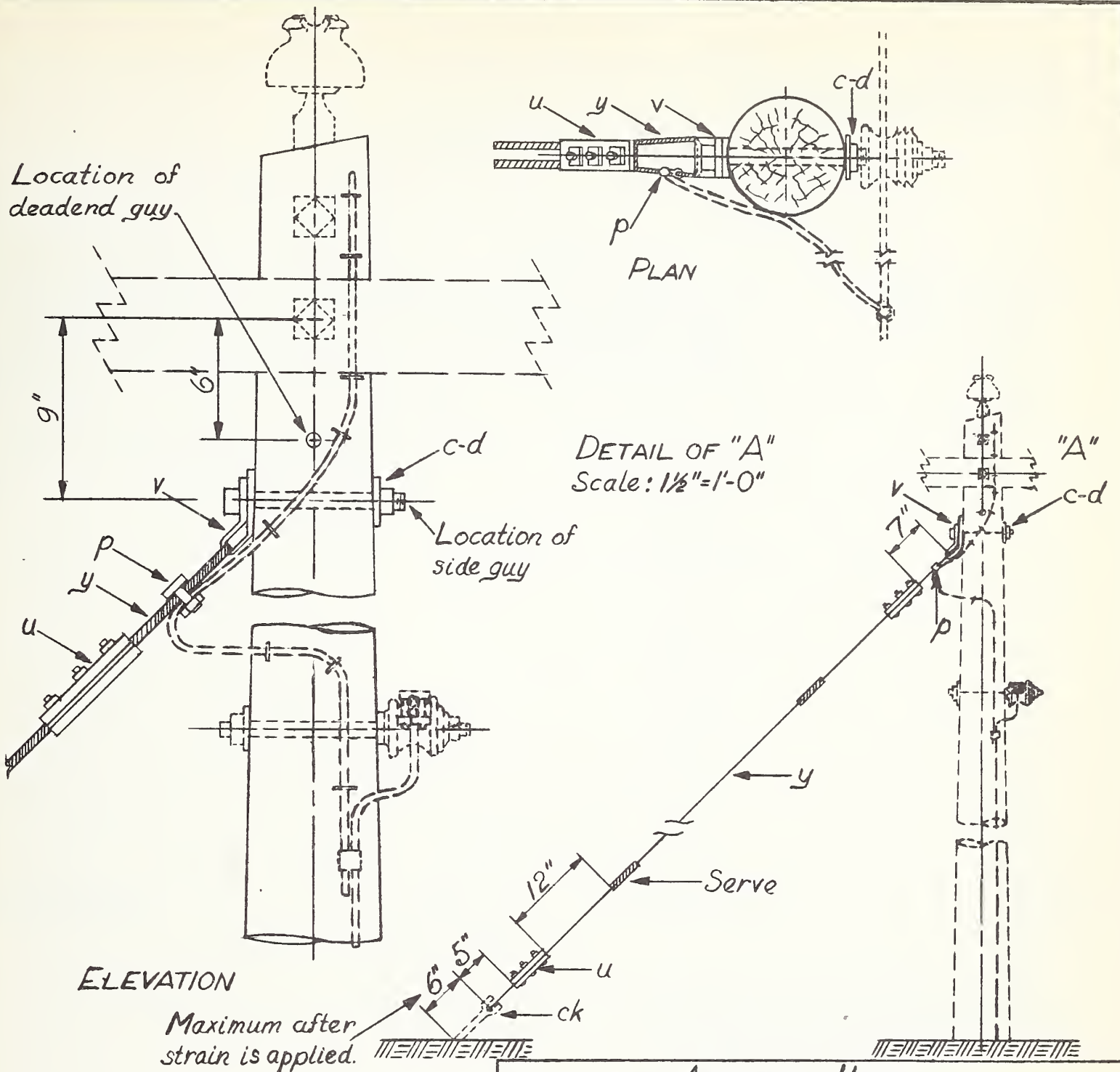
---KV. PRIMARY, 3-PHASE, 4-WIRE STAR  
CROSSARM CONSTRUCTION-DOUBLE CIRCUIT  
ONE LINE CONTINUING, 3-PHASE TAP

Scale: 3/8"=1'-0"

Date: Jan. 17, 1949

NO.	REVISION	DATE
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DC-C50



		ASSEMBLY UNIT	
		E1-1R1 1/4" Guy Wire	E1-2R1 3/8" Guy Wire
ITEM	MATERIAL	No. REQ'D.	No. REQ'D.
C	Bolt, machine, 5/8" x req'd. length	1	1
d	Washer, 2 1/4" x 2 1/4" x 3/16", 1/16" hole	1	1
p	Connectors, as req'd.	1	1
u	Clamp, guy, 3-bolt, 6" long	1	1
v	Guy attachment	2-Medium Duty	2-Medium Duty
y	Guy Wire, S-M, 7-Strand	1	1
ck	Clamp, anchor rod banding	1	1

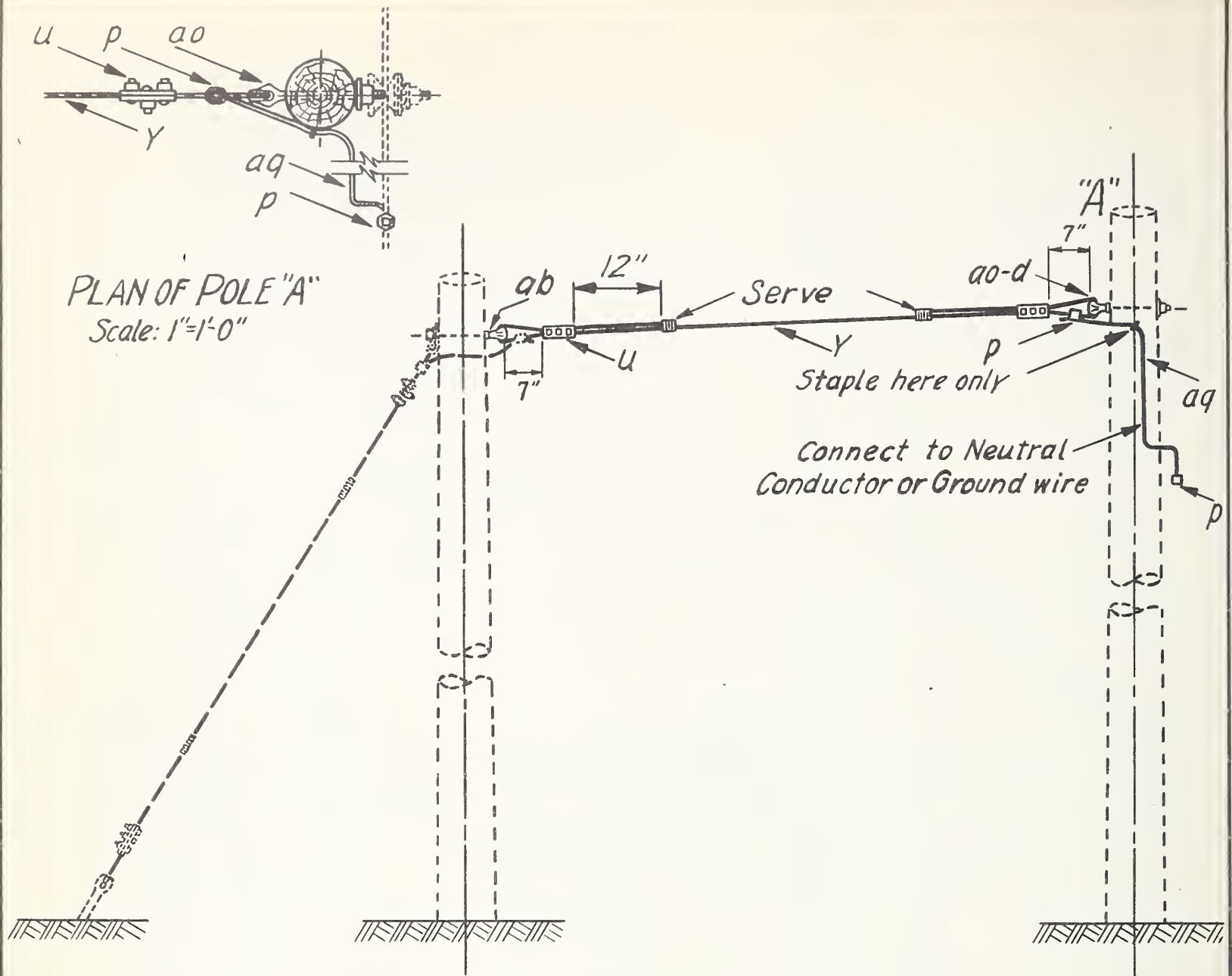
SINGLE DOWN GUY, THROUGH BOLT TYPE

Scale: 1/2" = 1'-0"

Date: May 26, '49

1	Redrawn	5-26-49
No.	REVISION	DATE

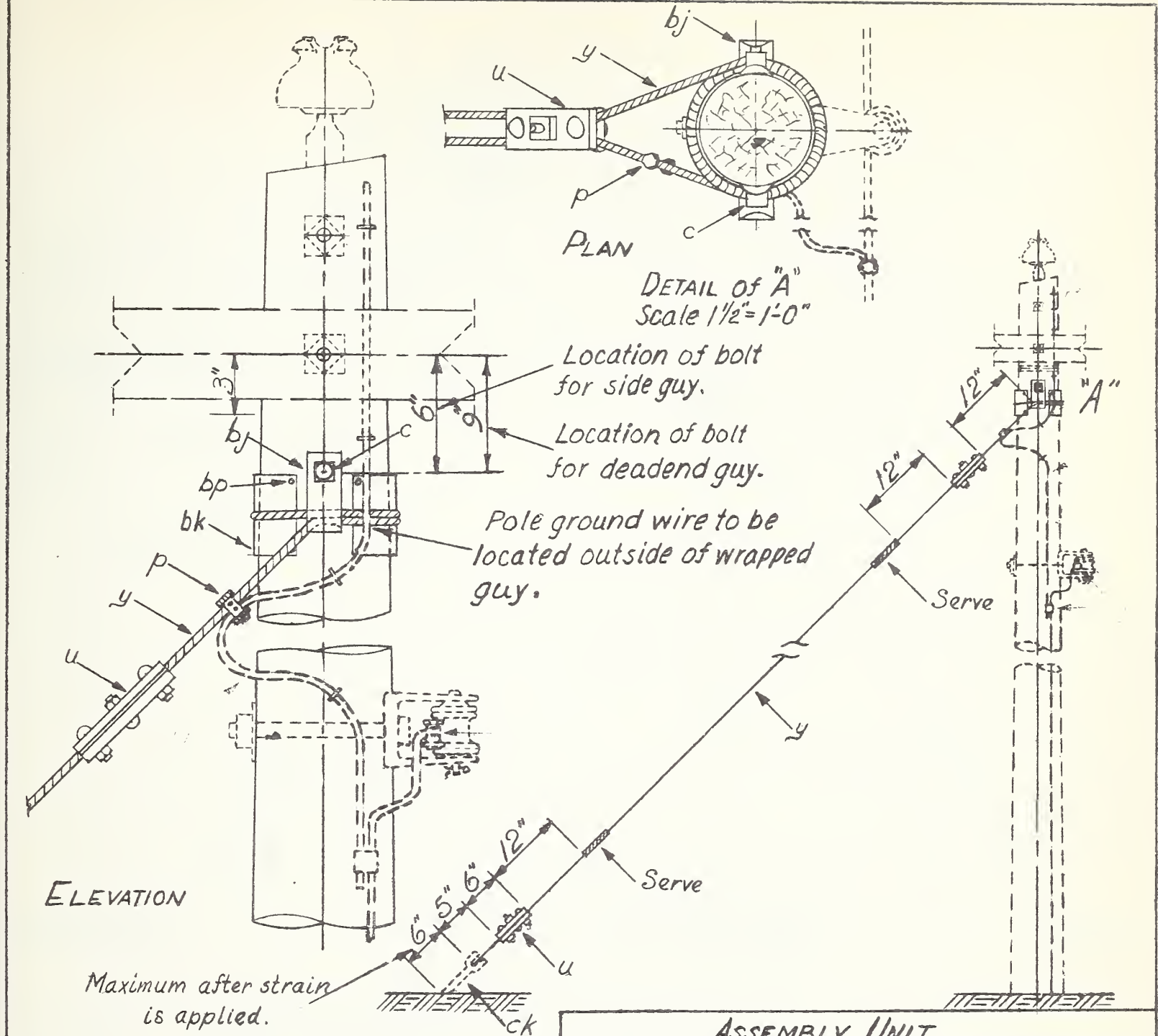
E1-1R1, E1-2R1



**NOTE:**

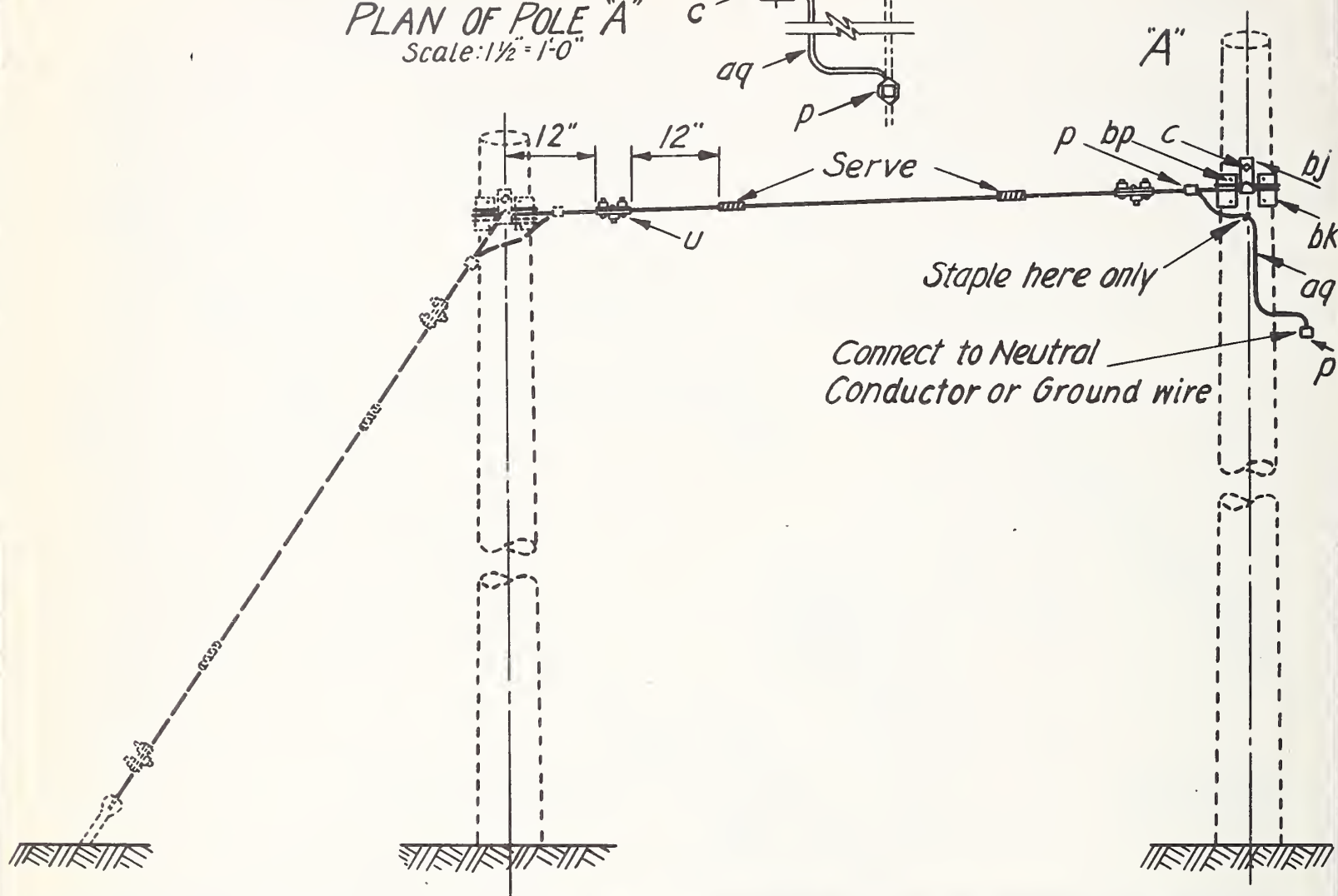
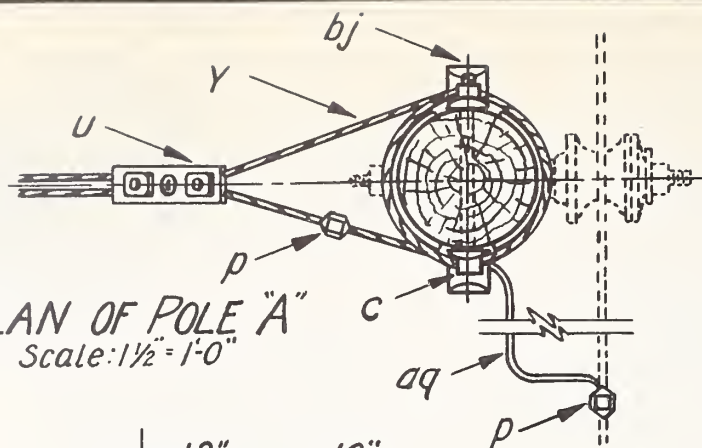
When the guy tension is more than 5200 pounds use wrapped type guy.

		ASSEMBLY UNIT	
		E2-1 1/4" Guy Wire	E2-2 3/8" Guy Wire
ITEM	MATERIAL	No REQ'D.	No REQ'D.
d	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	1	1
u	Clamp, guy, 3-bolt, 6" long	2-Medium Duty	2-Medium Duty
ab	Nut, thimble type eye, 5/8"	1	1
Y	Guy Wire, S-M., 7-strand	req'd. length	req'd. length
ao	Bolt, thimble eye, 5/8" x req'd. length	1	1
aq	Jumper, #6 S.D. or equivalent	1	1
p	Connectors, as req'd.		
		SINGLE OVERHEAD GUY, THROUGH BOLT TYPE	
		Scale: 1/2"=1'-0"	Date:
No.	REVISION	DATE:	E2-1, E2-2



		ASSEMBLY UNIT	
		E3-2R1 3/8" Guy Wire	E3-3R1 7/16" Guy Wire
ITEM MATERIAL		No. REQ'D.	No. REQ'D.
P	Connectors, as req'd.	1	1
C	Bolt, machine, 5/8" x req'd. length	1	1
U	Clamp, guy, 3-bolt, 6" long	2-Medium Duty	2-Heavy Duty
Y	Guy Wire, S-M, 7-strand	req'd. length	req'd. length
			1
bj	Guy Hook, J	2	2
bk	Guy Plate, 4" x 8", 14 gauge	2	2
bp	Nail, 8 penny	8	8
ck	Clamp, anchor rod bending	1	1

		SINGLE DOWN GUY, WRAPPED TYPE	
1 Redrawn		5-27-49	Scale: 1/2" = 1'-0"
No.	REVISION	DATE:	Date: May 27, '49
			E3-2R1, E3-3R1



### ASSEMBLY UNIT

ITEM	MATERIAL		
		E4-2 3/8" Guy Wire	E4-3 7/16" Guy Wire
		No. REQ'D	No. REQ'D.
c	Bolt, machine, 5/8" x req'd. length	1	1
p	Connectors, as req'd.		
u	Clamp, guy, 3-bolt, 6" long	2-Medium Duty	2-Heavy Duty
y	Guy Wire, S-M, 7-strand	req'd. length	req'd. length
aq	Jumper, #6 S.D. or equivalent	1	1
bj	Guy Hook, J	2	2
bk	Guy Plate, 4"x8", 14 gauge	2	2
bp	Nail, 8 penny	8	8

### SINGLE OVERHEAD GUY, WRAPPED TYPE

Scale: 1/2" = 1'-0"

Date:

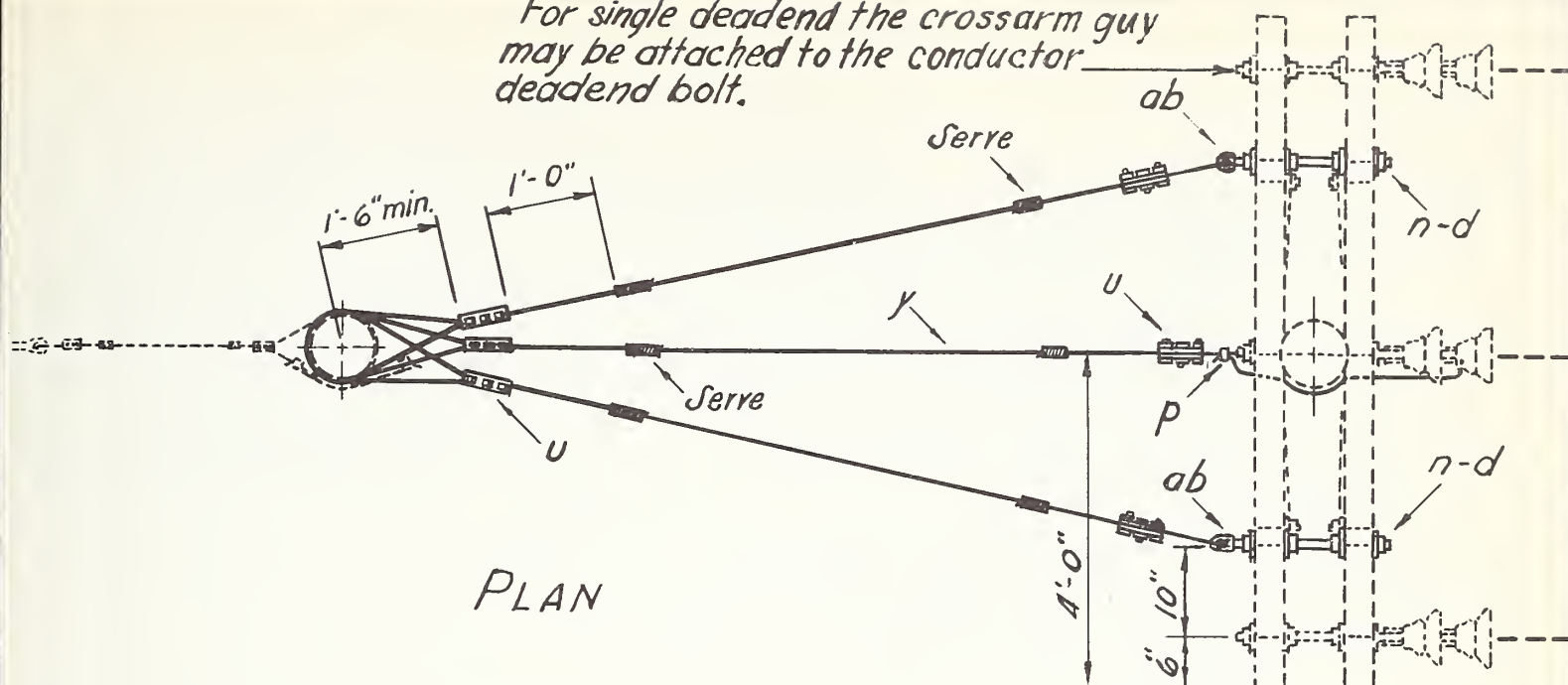
NO.

REVISION

DATE:

E4-2, E4-3

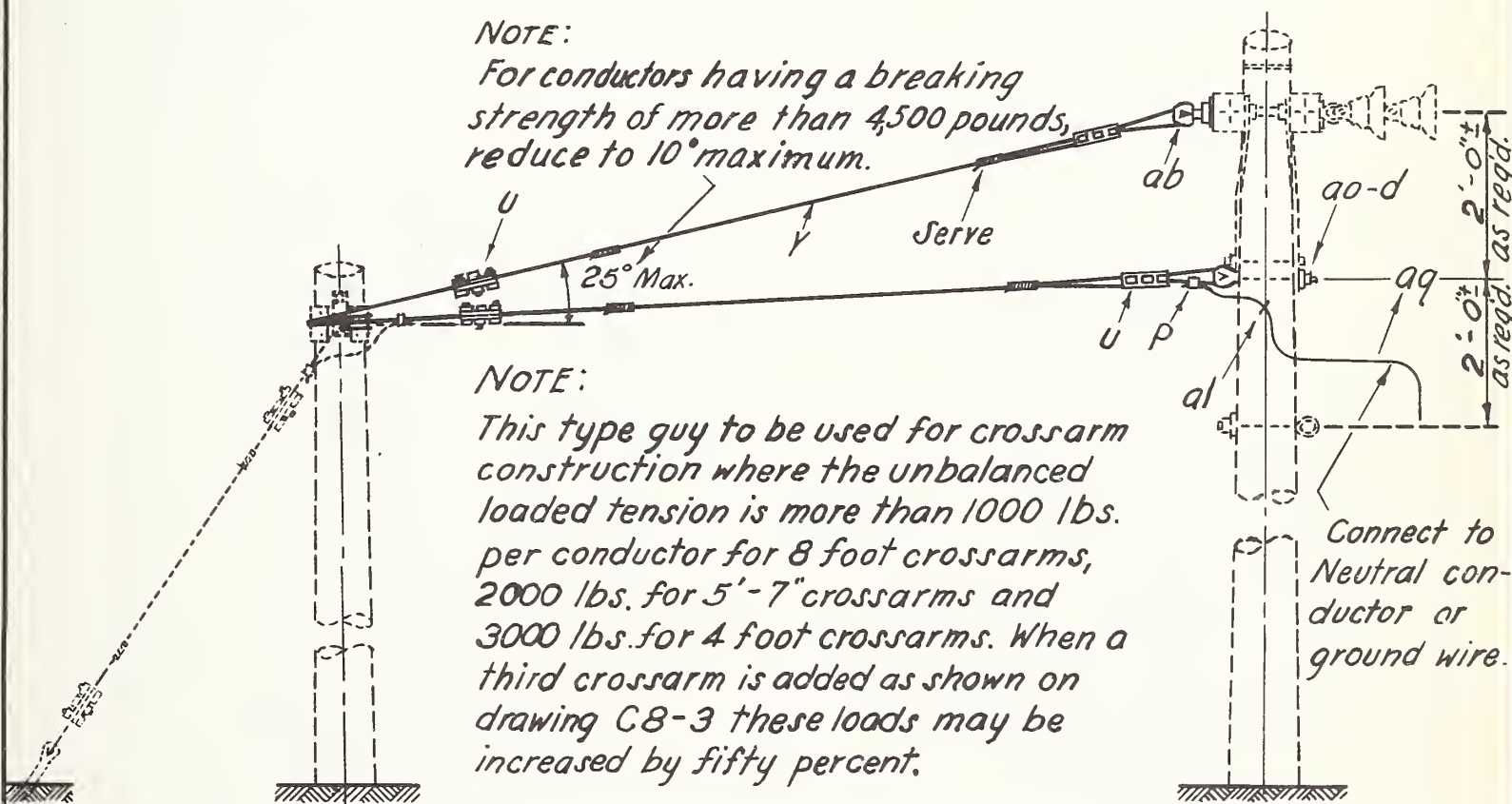
For single deadend the crossarm guy may be attached to the conductor deadend bolt.



PLAN

NOTE:

For conductors having a breaking strength of more than 4,500 pounds, reduce to 10° maximum.



NOTE:

This type guy to be used for crossarm construction where the unbalanced loaded tension is more than 1000 lbs. per conductor for 8 foot crossarms, 2000 lbs. for 5'-7" crossarms and 3000 lbs. for 4 foot crossarms. When a third crossarm is added as shown on drawing C8-3 these loads may be increased by fifty percent.

ITEM	No. REQD	MATERIAL	ITEM	No. REQD	MATERIAL
d	9	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	ab	2	Nut, thimble type eye, 5/8"
n	2	Bolt, double arming, 5/8" x reqd. lg.	ao	1	Bolt, thimble type eye, 5/8" x reqd. length
p		Connectors, as reqd.	aq		Jumper, #6 S.D. or equivalent
u	6	Clamp, guy, 3 bolt, 6" lg, medium duty	al	1	Staple, ground wire
y		Wire, guy, S.M. 7-strand, as reqd.			

## DEADEND GUY CROSSARM CONSTRUCTION

Scale: N.T.S.

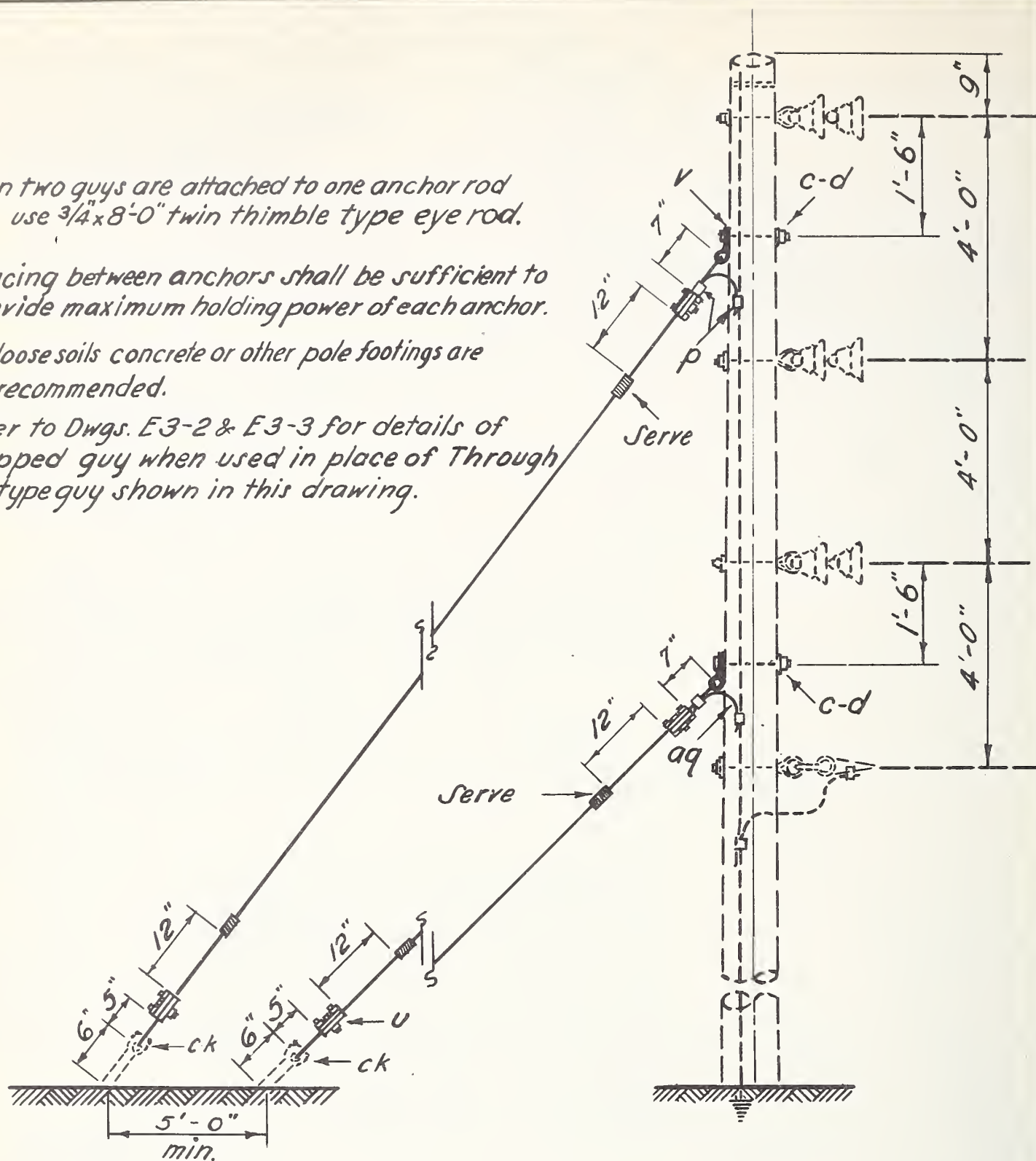
Date: Mar. 10, '48

1	Redrawn	3/10/48
No.	REVISIONS	DATE

E5-1R

# NOTES:

1. When two guys are attached to one anchor rod use  $\frac{3}{4} \times 8'-0"$  twin thimble type eye rod.
2. Spacing between anchors shall be sufficient to provide maximum holding power of each anchor.
3. For loose soils concrete or other pole footings are recommended.
4. Refer to Dwg. E3-2 & E3-3 for details of Wrapped guy when used in place of Through bolt type guy shown in this drawing.



ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
c	2	Bolt, machine, $\frac{5}{8} \times$ req'd length	v	2	Guy attachment
d	2	Washer, $2\frac{1}{4} \times 2\frac{1}{4} \times \frac{3}{16}$ , $\frac{13}{16}$ hole	y		Guy Wire, S-M, 7-strand
p		Connectors, as required	aq		Jumpers, #6 S.D. or equivalent
u	4	Clamp, guy, 3 bolt, 6" long	ck		Clamp, guy bond, as req'd.

## DOUBLE DOWN GUY

Scale:  $\frac{1}{2} = 1'-0"$

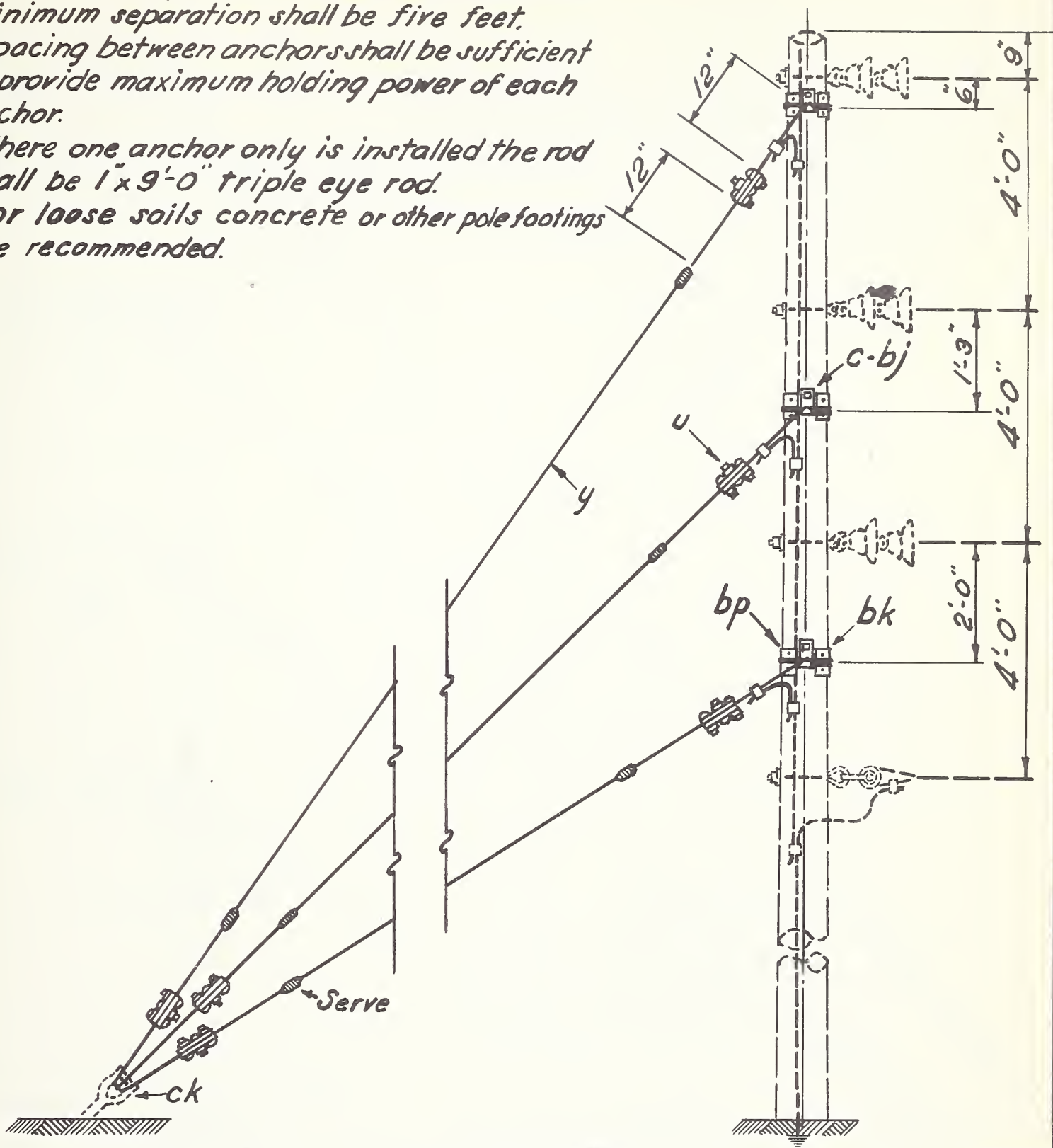
Date: Mar. 3, '48

1	Added ground wire & jumper	3/3/8
No.	REVISION	DATE

E 6 R

## Notes

1. Where three separate anchors are installed the minimum separation shall be five feet.
2. Spacing between anchors shall be sufficient to provide maximum holding power of each anchor.
3. Where one anchor only is installed the rod shall be 1" x 9'-0" triple eye rod.
4. For loose soils concrete or other pole footings are recommended.



ITEM	No. REQD	MATERIAL	ITEM	No. REQD	MATERIAL
c	3	Bolt, machine, 5/8" x req'd lg.	bp		Nail, 8 penny, as req'd.
u	6	Clamp, guy, heavy, 3 bolt, 6" lg.	ck		Clamp, guy bond, as req'd.
y		Guy Wire, S-M, 7-strand, as req'd.			
bj	6	Guy Hook, "J"			
bk	6	Guy Plate, 4" x 8", 14 gauge			

## THREE DOWN GUYS (LARGE CONDUCTORS)

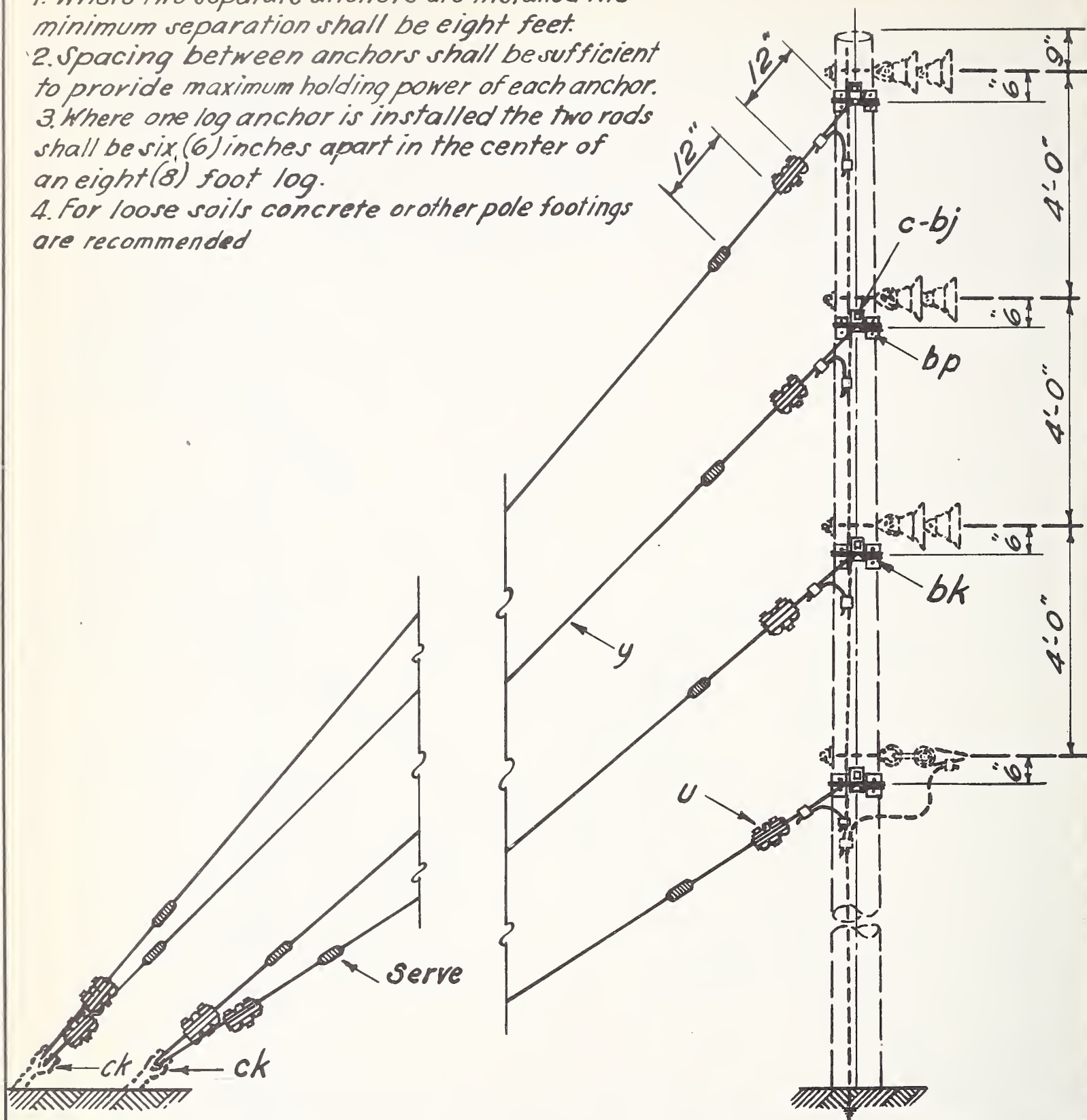
Scale: 1/2" = 1'-0"

Date: Nov. 20, 47

No.	REVISION	DATE	
			E 7

## NOTES

1. Where two separate anchors are installed the minimum separation shall be eight feet.
2. Spacing between anchors shall be sufficient to provide maximum holding power of each anchor.
3. Where one log anchor is installed the two rods shall be six (6) inches apart in the center of an eight (8) foot log.
4. For loose soils concrete or other pole footings are recommended



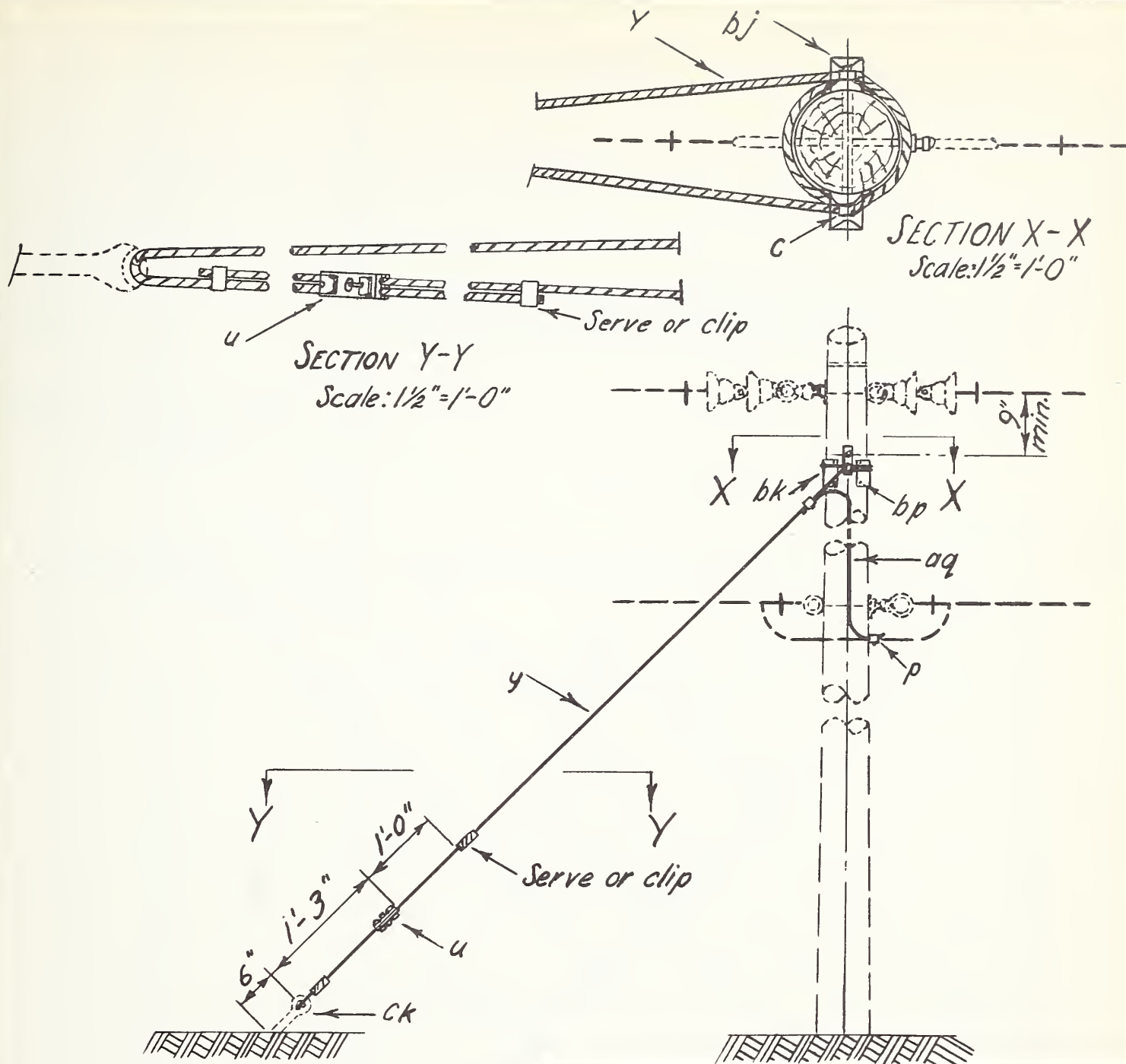
ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
c	4	Bolt, machine, 5/8" x req'd. lg.	bp		Nail, 8 penny, as req'd.
u	8	Clamp, guy, heavy, 3 bolt, 6" lg.	ck		Clamp, guy bond, as req'd.
y		Guy Wire, S-M, 7 strand			
bj	8	Guy Hook "J"			
bk	8	Guy Plate, 4"x8", 14 gauge			

## FOUR DOWN GUYS (LARGE CONDUCTORS)

Scale: 1/2" = 1'-0"

Date: Feb. 9, 1947

No.	REVISION	DATE	E 8
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### ASSEMBLY UNIT

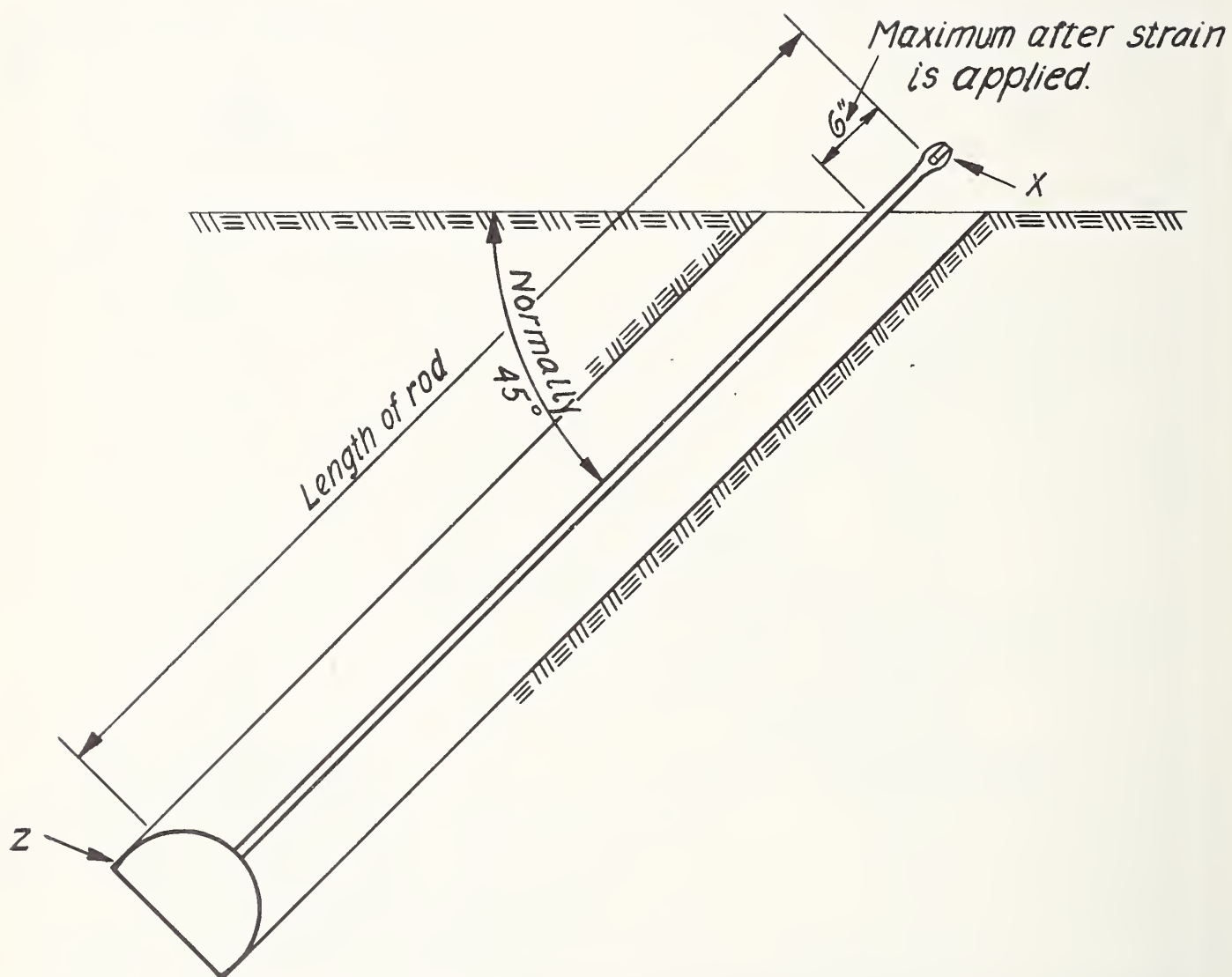
ITEM	MATERIAL	E 11 1/4" GUY WIRE	E 12 3/8" GUY WIRE		
		No. REQ'D	No. REQ'D		
c	Bolt, machine, 5/8" x req'd. length	1	1		
u	Clamp, Guy, 3-bolt, 6" long	1-Medium Duty	1-Medium Duty		
y	Guy Wire, S-M	req'd. length	req'd. length		
ck	Clamp, anchor rod bonding	1	1		
bj	Guy Hook, J	2	2		
bk	Guy Plate, 4"x8", 14 guage	2	2		
bp	Nail, 8 penny	8	8		
aq	Jumper, #6 S.D. copper or equivalent				
p	Connectors, as req'd.				

### SINGLE LOOP GUY, WRAPPED TYPE

Scale: 1/2"=1'-0"

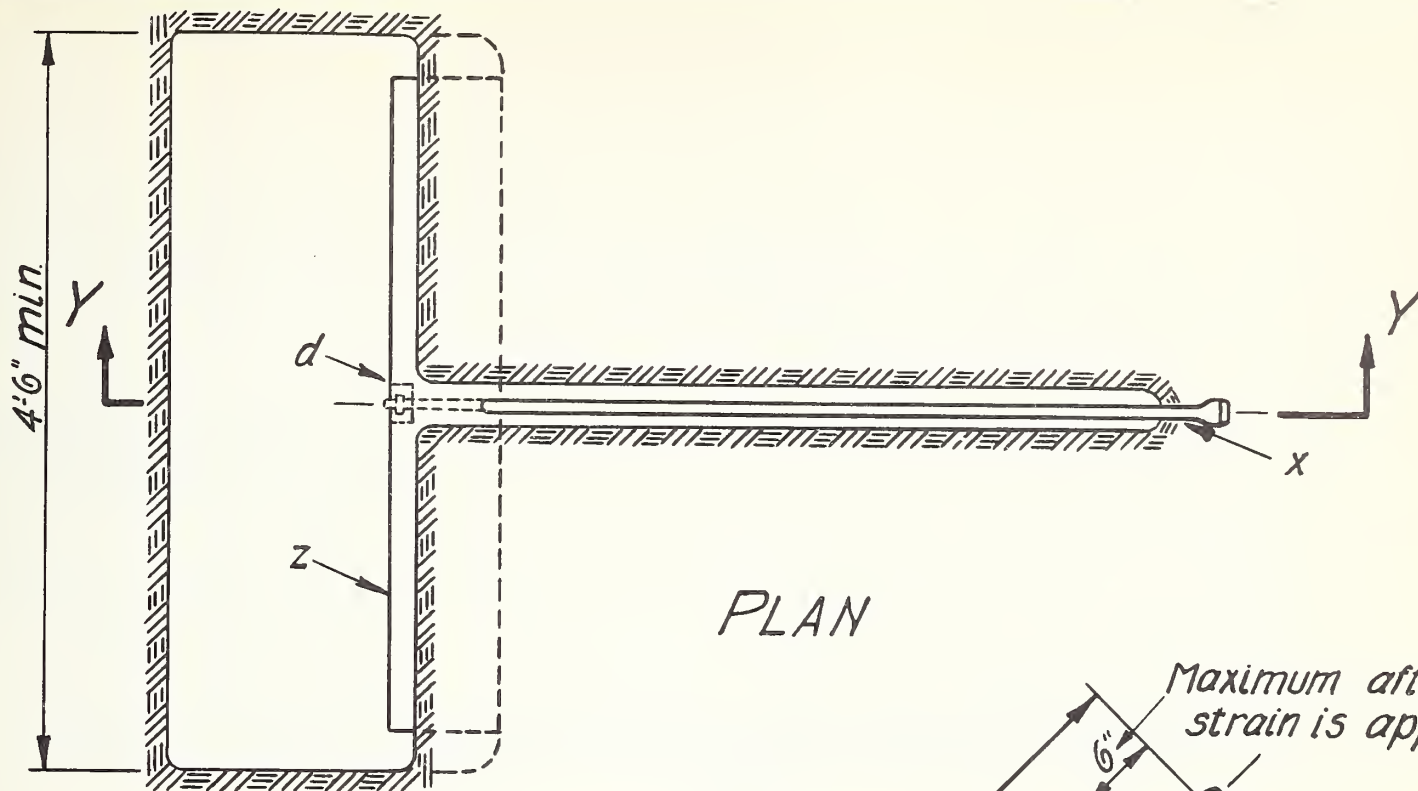
Date: Dec. 20, 1948

E 11, E 12

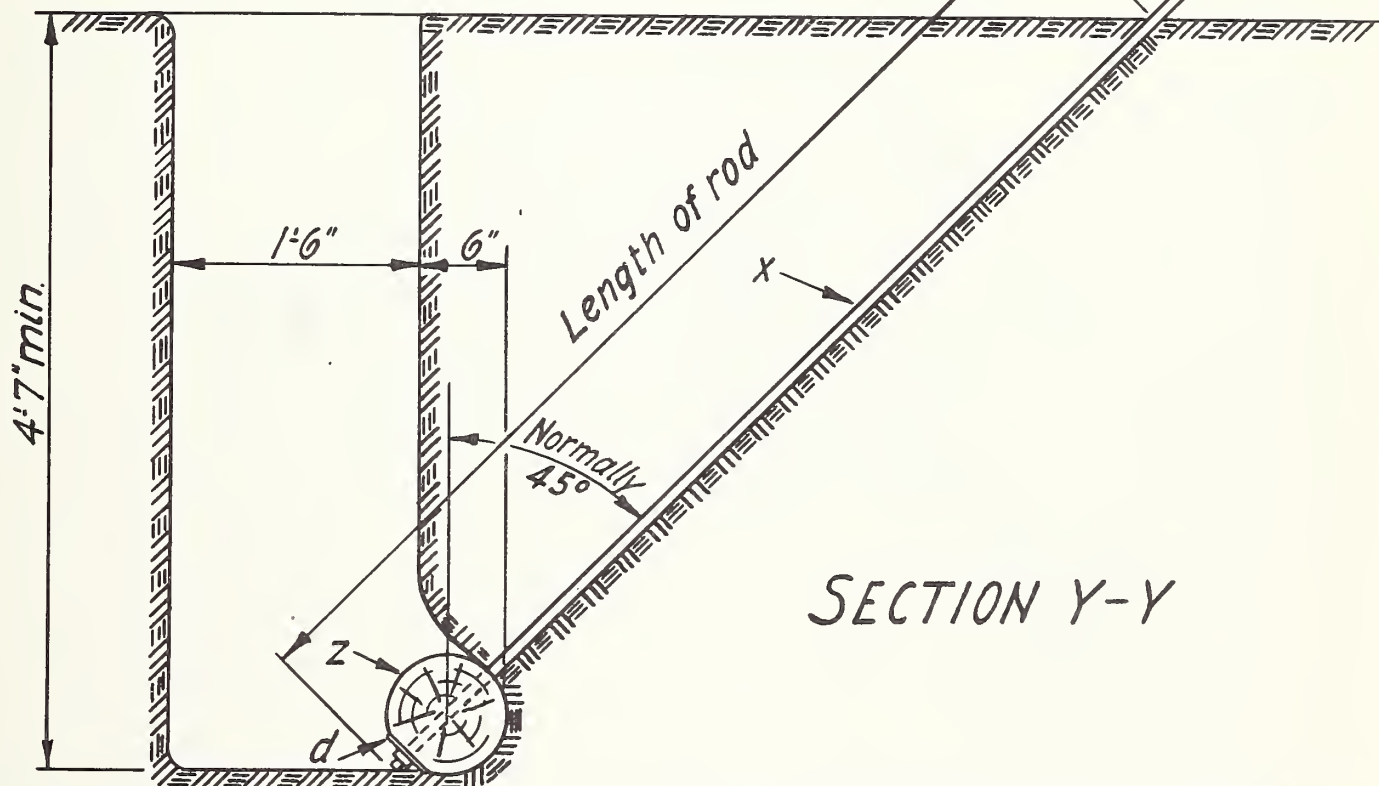


		ASSEMBLY UNIT							
		F1-1		F1-2		F1-3		F1-4	
ITEM	MATERIAL	No. REQ'D.	TYPE	No. REQ'D.	TYPE	No. REQ'D.	TYPE	No. REQ'D.	TYPE
X	Rod, anchor, thimble type eye	1	5/8" x 7'-0"	1	5/8" x 7'-0"	1	3/4" x 8'-0"	1	3/4" x 8'-0"
Z	Anchor, Patent (holding power in ordinary soil)	1	6000#	1	8000#	1	10,000#	1	12,000#

		PATENT ANCHOR ASSEMBLY	
		Scale: 3/4" = 1'-0"	Date:
NO.	REVISION	DATE:	F1-1, F1-2, F1-3, F1-4.



PLAN



SECTION Y-Y

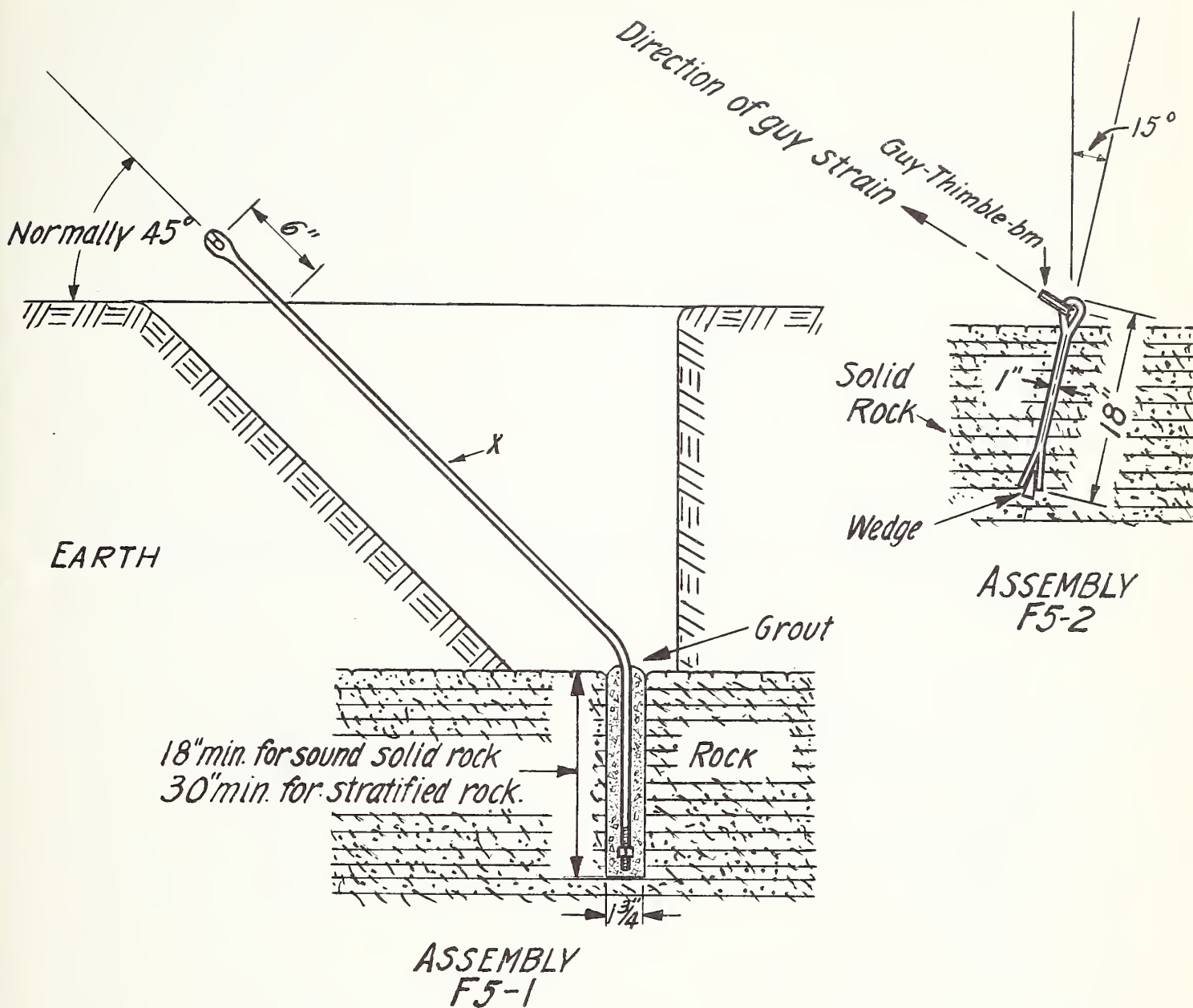
ASSEMBLY UNIT

		ASSEMBLY UNIT							
		F2-1		F2-2		F2-3		F2-4	
ITEM	MATERIAL	No. REQ'D	TYPE	No. REQ'D	TYPE	No. REQ'D	TYPE	No. REQ'D	TYPE
d	Washer, $\frac{13}{16}$ " hole (1 $\frac{1}{8}$ " min. for F2-4)	1	4" x 4" x $\frac{1}{2}$ "	1	4" x 4" x $\frac{1}{2}$ "	1	4" x 4" x $\frac{1}{2}$ "	1	4" x 4" x $\frac{1}{2}$ "
x	Rod, anchor, thimble type eye	1	$\frac{5}{8}$ " x 7'-0"	1	$\frac{3}{4}$ " x 8'-0"	1	$\frac{3}{4}$ " x 8'-0"	1	1" x 9'-0"
z	Anchor (creosoted log)	1	8" dia. x 4'-0"	1	9" dia. x 4'-6"	1	10" dia. x 5'-0"	1	12" dia. x 5'-0"
	Holding power in ordinary soil		8000*		10000*		12000*		16,000*

LOG ANCHOR ASSEMBLY

1	Added F2-4 Unit	8-12-46	Scale: $\frac{3}{4}$ " = 1'-0"	Date:
No.	REVISION	DATE:		F2-1, F2-2, F2-3, F2-4





**Notes:**

1. - Only one guy shall be attached to a rock anchor. Where more than one guy is required space anchors 2 ft. minimum and where practical they shall be in direct line with pole.
2. - Do not anchor to any boulder measuring less than 5 ft. in two directions at right angles to each other.

**ROCK ANCHOR ASSEMBLY**

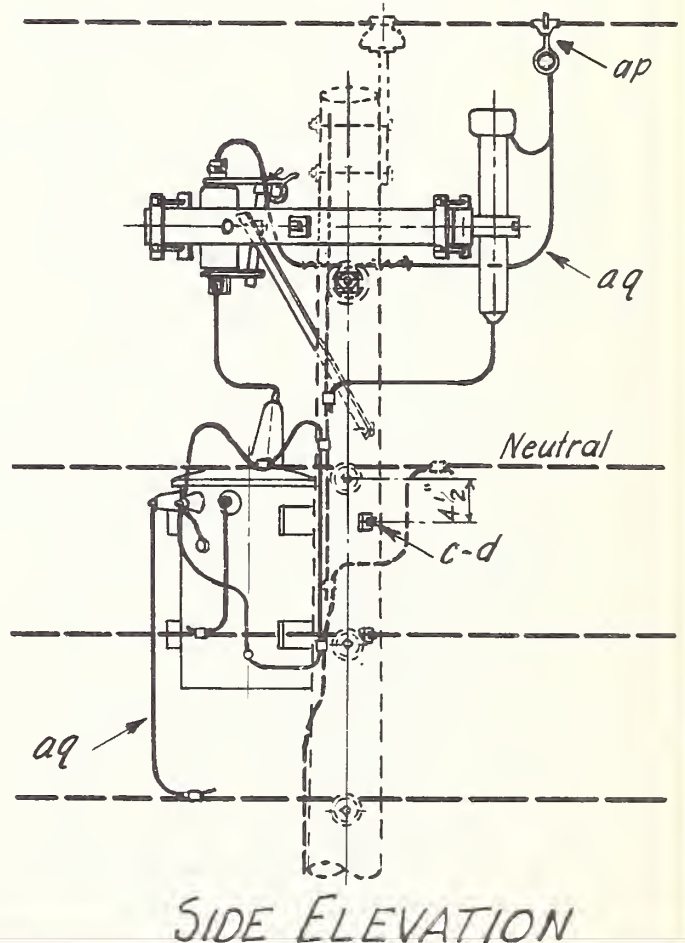
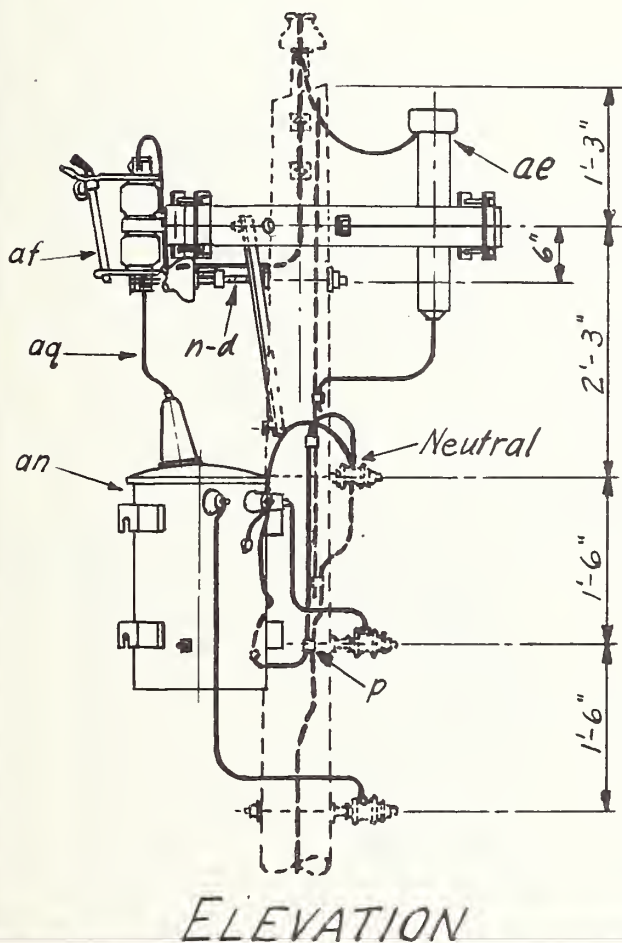
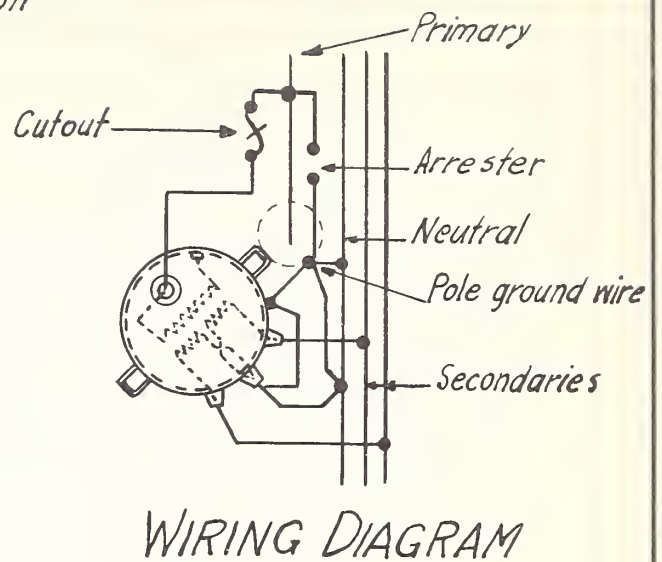
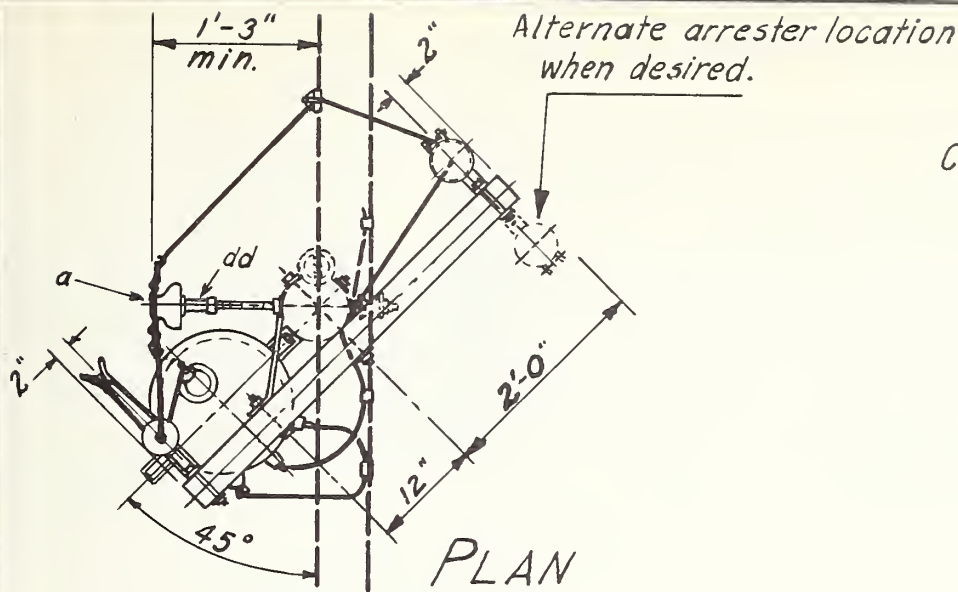
Scale: 3/4"=1'-0"

Date:

F5-1, F5-2

NO. REVISION DATE:





ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
a	1	Insulator, pin type	n	1	Bolt, double arming, 5/8"x req'd. length
c	3	Bolt, machine, 5/8"x req'd. length	ae	1	Lightning Arrester
d	6	Washer, 2 1/4"x 2 1/4"x 3/16", 13/16" hole	af	1	Cutout, fuse, single shot
g	1	Crossarm, 3 1/2"x 4 1/2"x 4'-0"	an	1	Transformer, coordinated, convent.
h	1	Brace, 1 1/4"x 1/4"x 28"	ap	1	Clamp, hot line, tap assembly
i	1	Bolt, carriage, 3/8"x 4 1/2"	aq		Leads, #6 S.D. copper or equiv.
j	1	Screw, lag, 1/2"x 4"	dd	1	Adapter, insulator
p		Connectors, as req'd.			

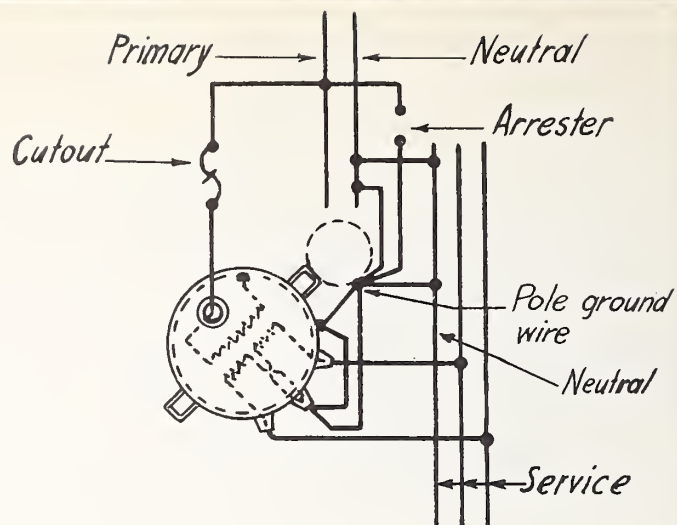
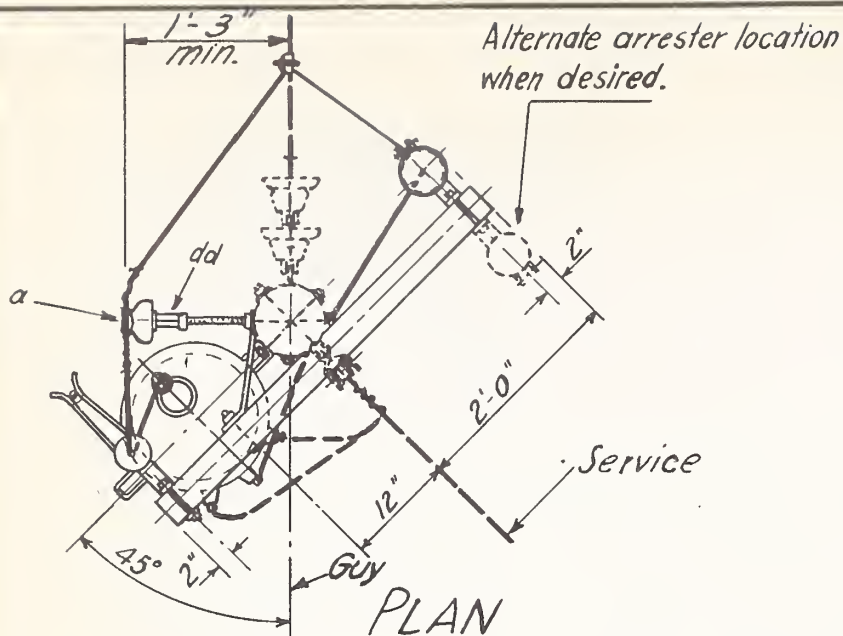
...KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
CONVENTIONAL TRANSFORMER AT 0° TO 5° ANGLE

Scale: 1/2" = 1'-0"

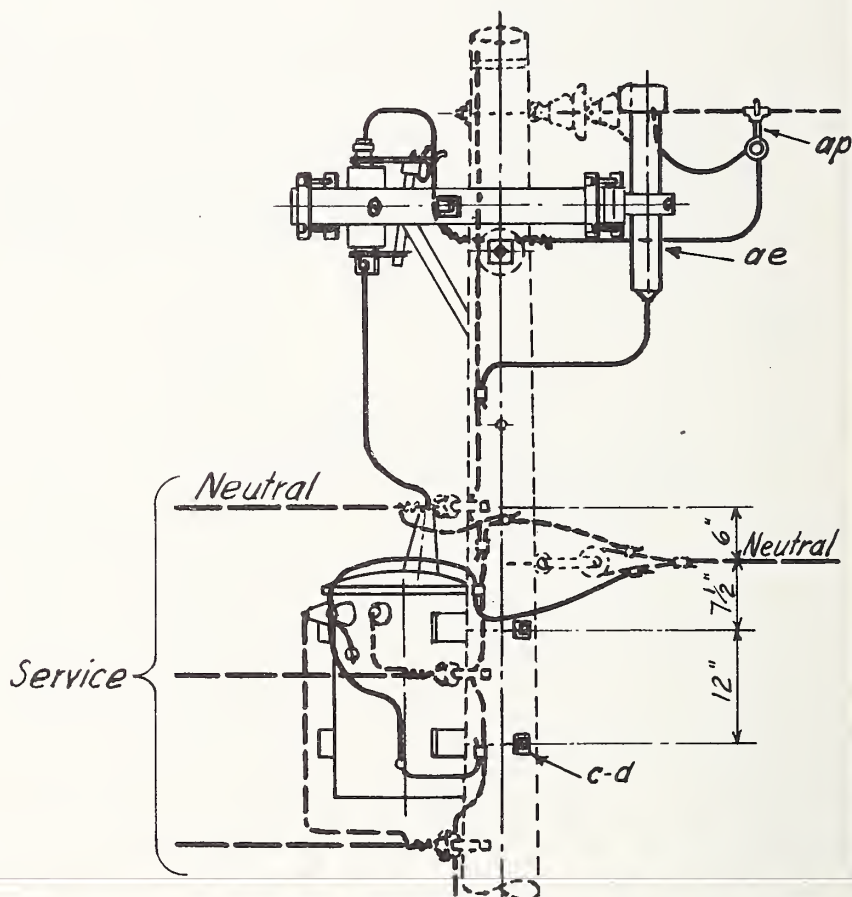
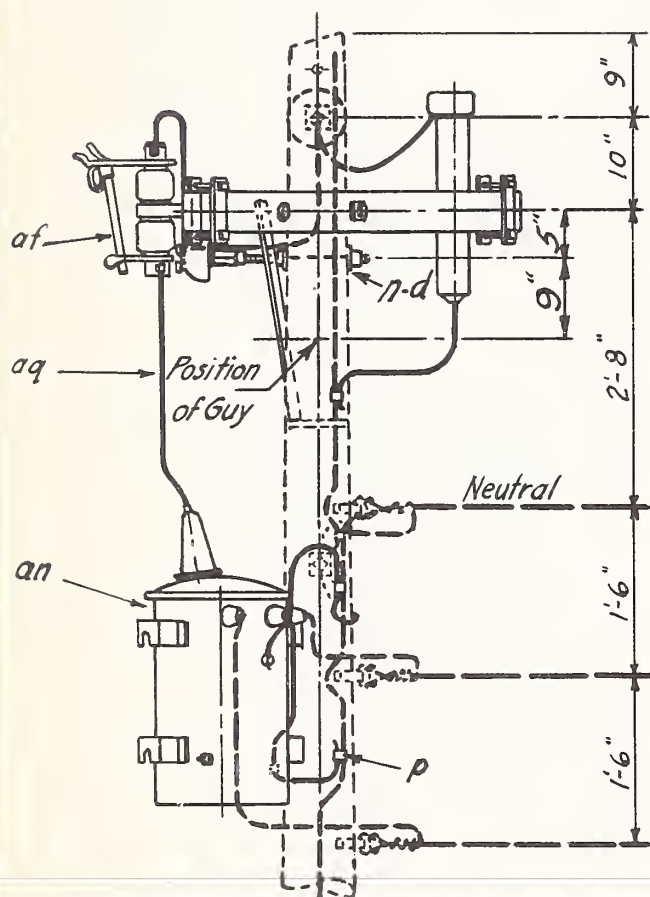
Date: July 29, 1948

No. REVISIONS DATE

G5-1 1/2 R



WIRING DIAGRAM



ITEM	No. Req'd.	MATERIAL	ITEM	No. Req'd.	MATERIAL
a	1	Insulator, pin type	n	1	Bolt, double arming, 5/8" x req'd. length
c	3	Bolt, machine, 5/8" x req'd. length	ae	1	Lightning Arrester
d	6	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	af	1	Cutout, fuse, single-shot
g	1	Crossarm, 3 1/2" x 4 1/2" x 4'-0"	an	1	Transformer, coordinated, convent.
h	1	Brace, 1/4" x 1/4" x 28"	ap	1	Clamp, hot line, tap assembly
i	1	Bolt, carriage, 3/8" x 4 1/2"	aq		Leads, #6 S.D. copper or equivalent
j	1	Screw, lag, 1/2" x 4"	dd	1	Adapter, insulator
p		Connectors, as req'd.			

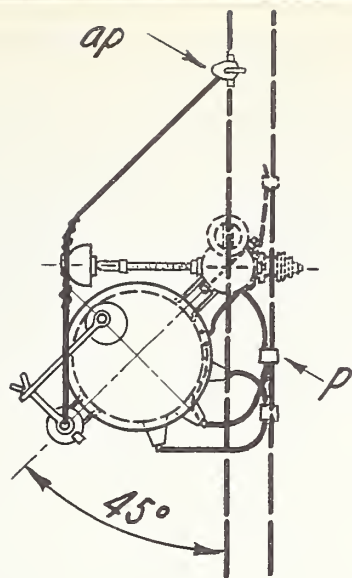
--- KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
CONVENTIONAL TRANSFORMER AT DEADEND

Scale: 1/2" = 1'-0"

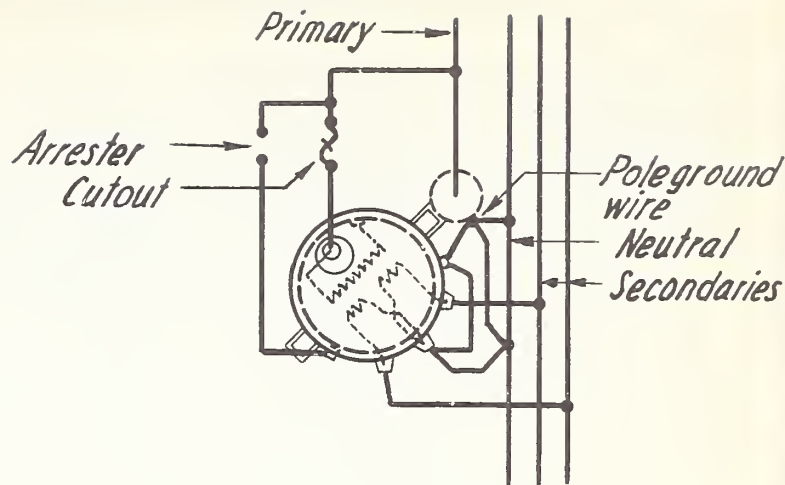
Date: July 29, 1948

No. REVISIONS DATE

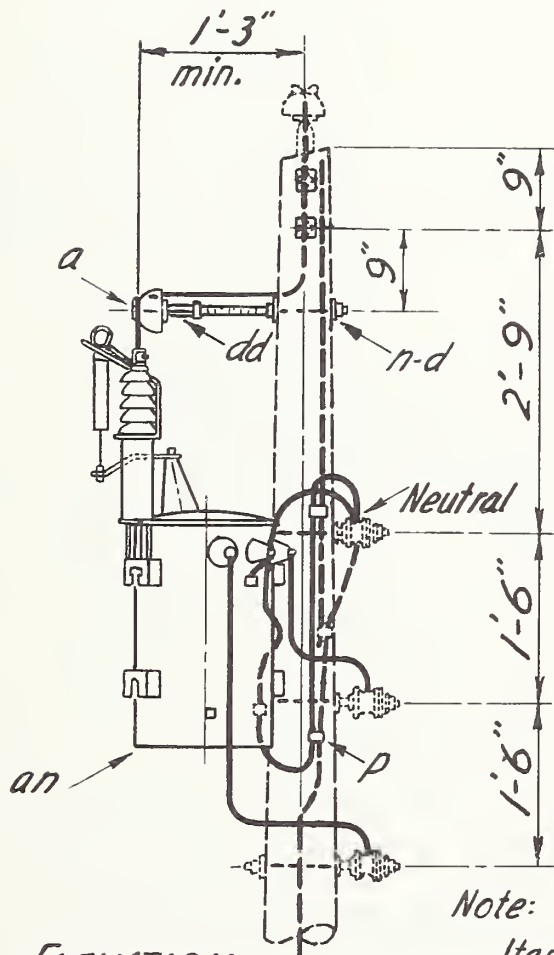
G 6-1 1/2 R



PLAN



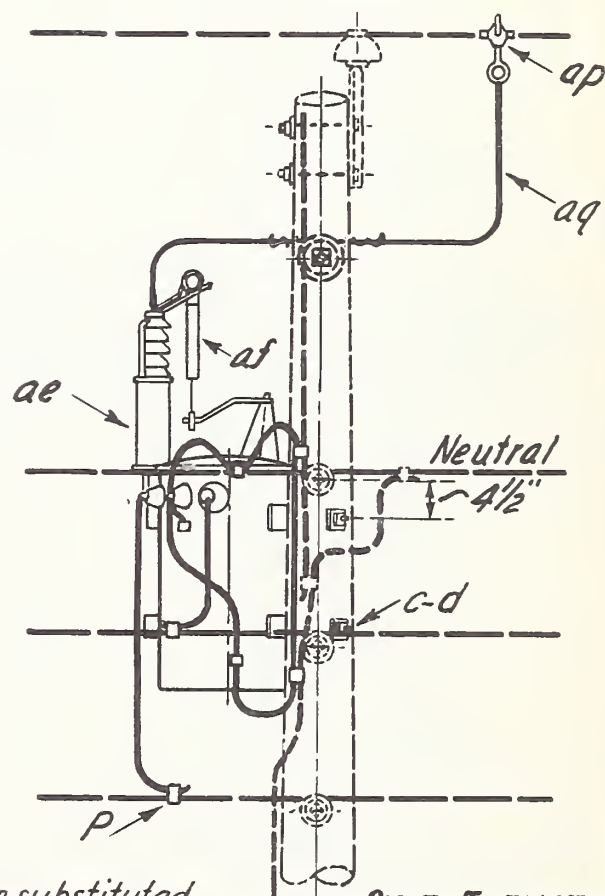
WIRING DIAGRAM



ELEVATION

Note:

Item ax may be substituted for items ae and af.



SIDE ELEVATION

ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
a	1	Insulator, pin type	af	1	Cutout, fuse, single shot
c	2	Bolt, machine, 3/8" x req'd. length	an	1	Transformer, coordinated, conventional
d	4	Washer, 2 1/4" x 2 1/4" x 3/16", 3/16" hole	ap	1	Clamp, hot line, tap assembly
n	1	Bolt, double arming, 3/8" x req'd. length	aq		Leads, #6 S.D. copper or equiv.
ae	1	Lightning arrester	dd	1	Adapter, Insulator
p		Connectors, as req'd.			

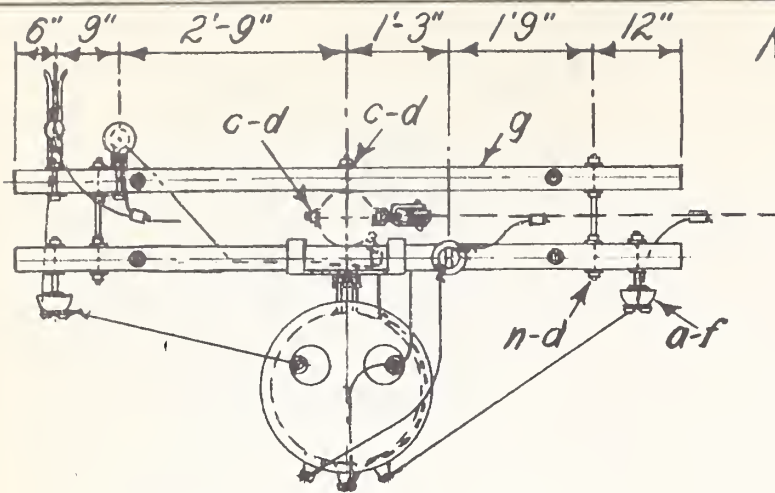
K V. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
CONVENTIONAL TRANSFORMER WITH TANK MOUNTED  
CUTOUT AND LIGHTNING ARRESTER

Scale: 1/2" = 1'-0"

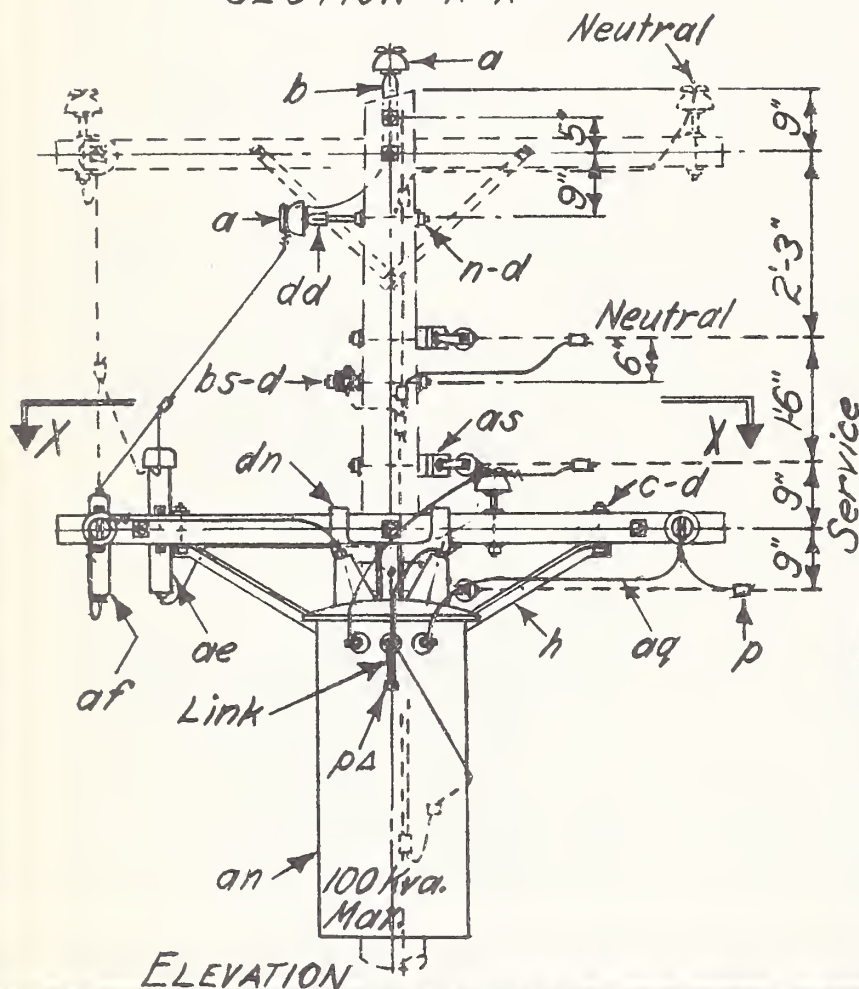
Date: June 15, 1948

1	Added note and connectors	10/28/48
No.	REVISION	Date:

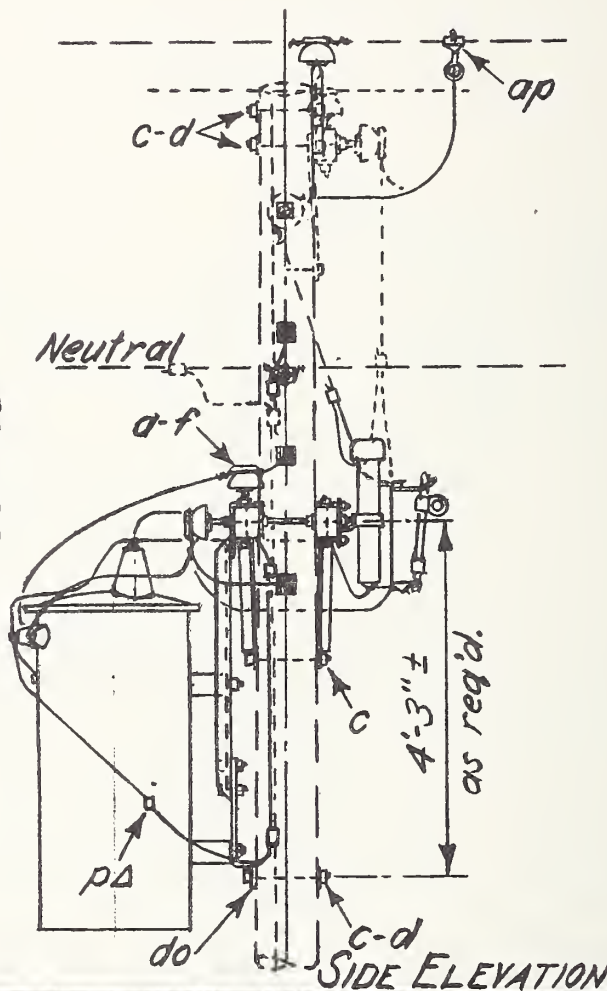
69-1 1/2



SECTION "X-X"



ELEVATION



SIDE ELEVATION

Notes: Locate service below transformer when future three phase supply may be required.

\* Specify these items to be furnished by the manufacturer.

ITEM	No. Req'd.	MATERIAL	ITEM	No. Req'd.	MATERIAL
a	5	Insulator, pin type	p		Connectors, as req'd.
b	1	Pin, pole top, 15"	an	1	Transformer
c	8	Bolt, machine, 5/8"x req'd. length	ap	1	Clamp, hot line, tap assembly
c	4	Bolt, machine, 1/2"x req'd. length	aq		Jumpers, as req'd.
d	19	Washer, 2 1/4"x 2 1/4"x 3/16", 13/16" hole	as	3	Clevis, service, swinging, insulated
d	4	Washer, round, 1 3/8" dia., 9/16" hole	bs	1	Bolt, single upset, insulated
f	3	Pin, crossarm, steel, 5/8"x 10 3/4"	dd	1	Adapter, insulator
g	2	Crossarm, 3 1/2"x 4 1/2"x 8'-0"	dn	1	Hanger, T-crossarm, as req'd. *
h	2	Brace, angle, 1 1/2"x 1 1/2"x 3/8", 60" span	do	1	Kicker bracket *
n	3	Bolt, double arming, 5/8"x req'd. lth.	pa	2	Connector, solderless *
	1	Link, neutral grounding *			

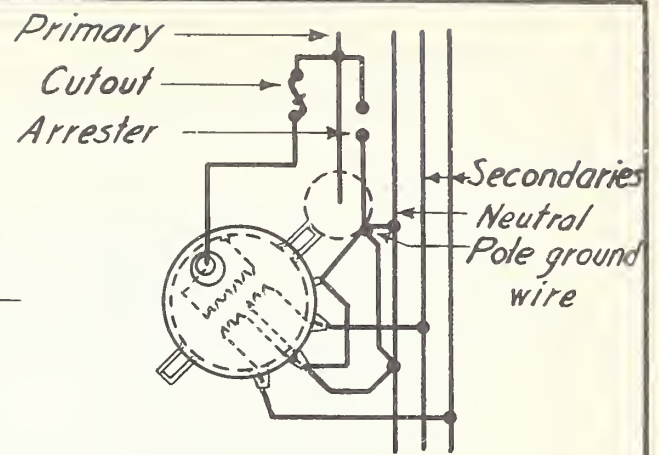
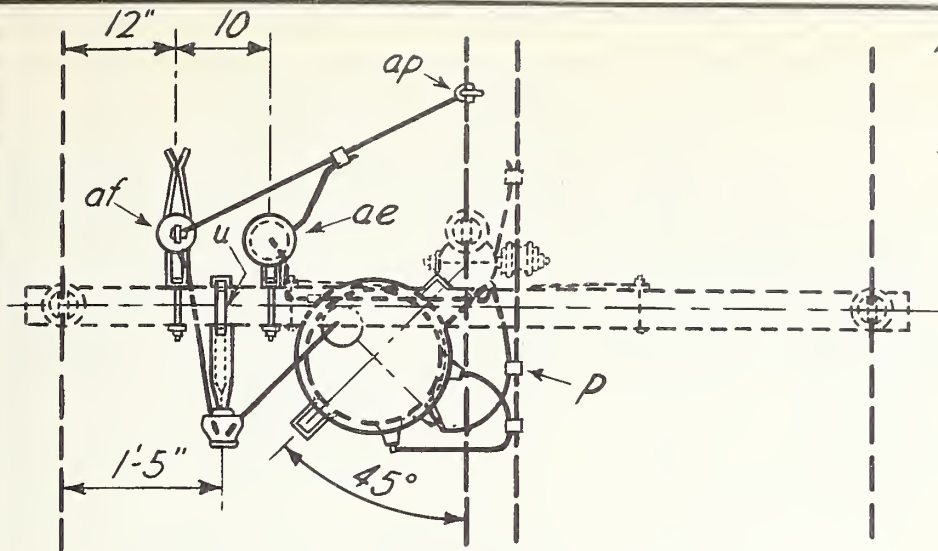
KV. PRIMARY, 1-PHASE, 2-WIRE, NEUTRAL GROUNDED  
ONE CONVENTIONAL TRANSFORMER  
TWO BUSHING TYPE

Scale: 3/8"=1'-0"

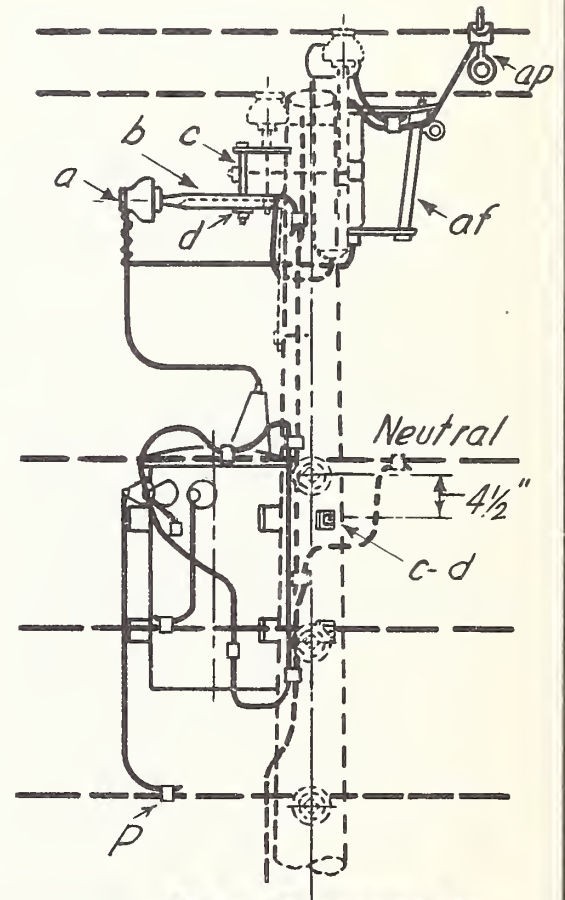
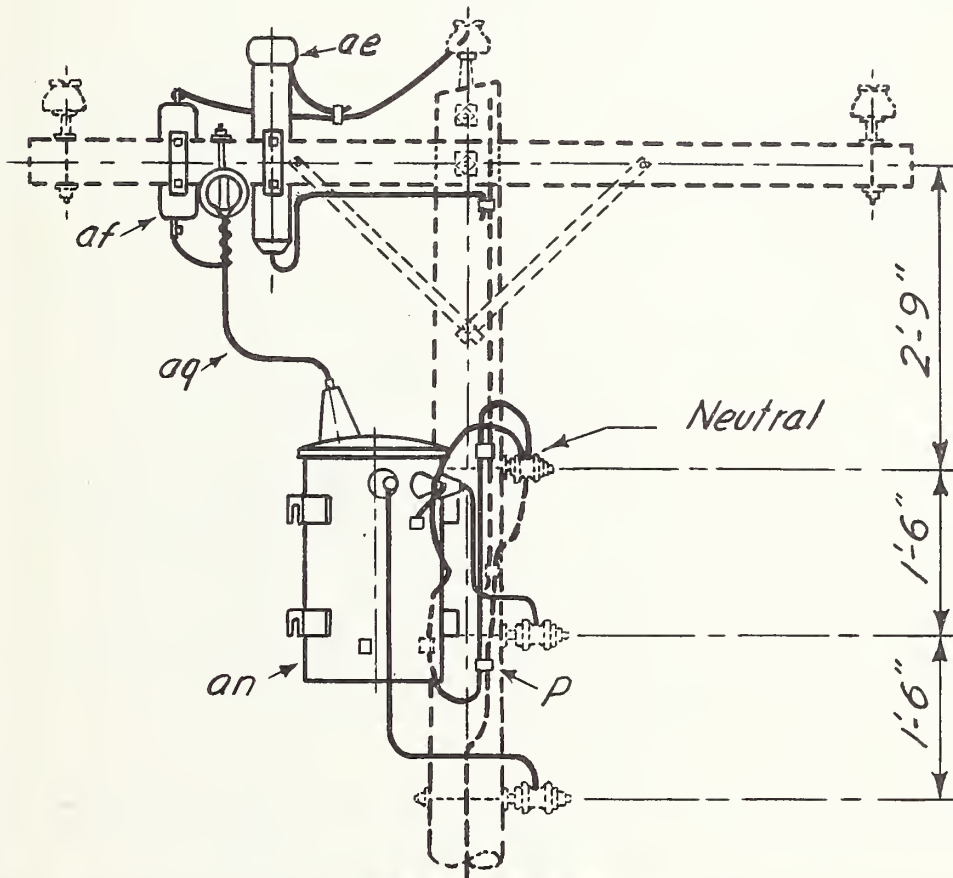
Date: Nov. 21, '49

No. REVISION DATE

G33-25



WIRING DIAGRAM



SIDE ELEVATION

ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
a	1	Insulator, pin type	ae	1	Lightning Arrester
b	1	Pin, pole top, 15"	af	1	Cutouts, fuse, single-shot
c	4	Bolt, machine, 5/8" x req'd. length	an	1	Transformer, coordinated, conventional
d	4	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	ap	1	Clamp, hot line, tap assembly
p		Connectors, as req'd.	aq		Leads, #6 S.D. copper or equivalent
u	1/2	Clamp, guy, 3-bolt, 6" long			

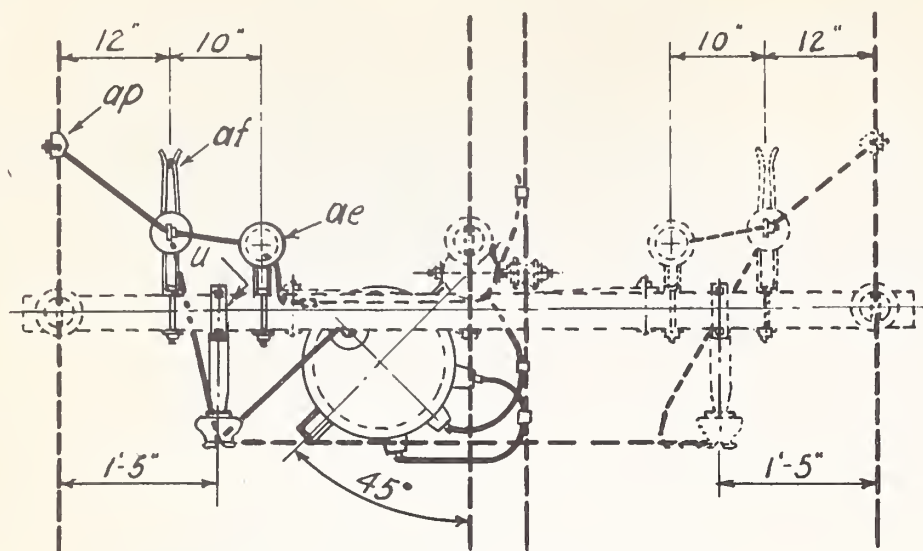
KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CONVENTIONAL TRANSFORMER ON MIDDLE WIRE 0°-5° ANGLE

Scale: 1/2" = 1'-0"

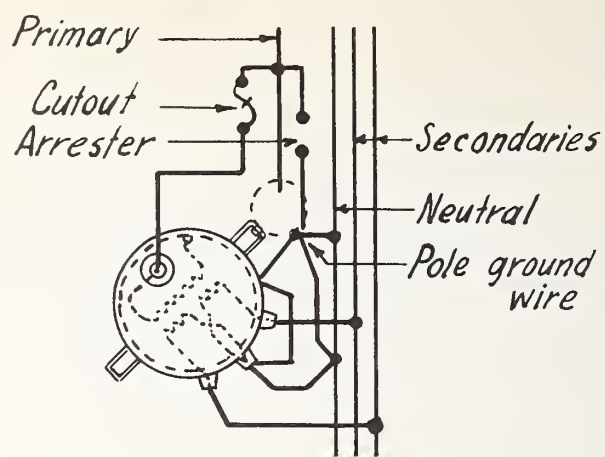
Date: April 5, 1948

No. REVISION Date

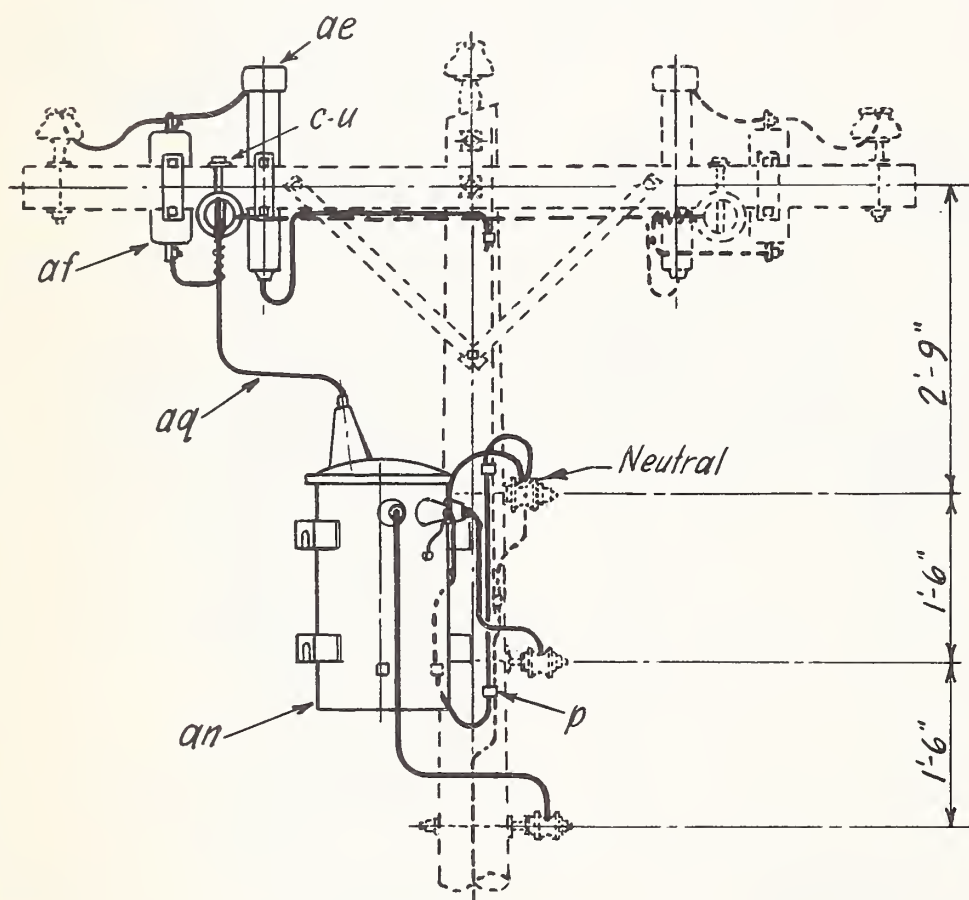
6 35-1 1/2 R



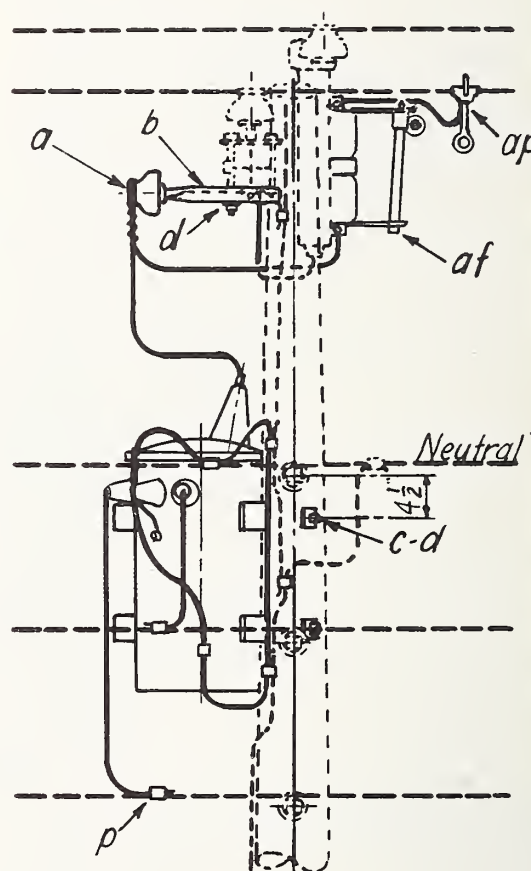
PLAN



WIRING DIAGRAM



ELEVATION



SIDE ELEVATION

ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
a	1	Insulator, pin type	ae	1	Lightning Arrester
b	1	Pin, pole top, 15"	af	1	Cutout, fuse, single shot
c	4	Bolt, machine, 5/8"x req'd length	an	1	Transformer, coordinated, conventional
d	4	Washer, 2 1/4"x 2 1/4"x 3/16", 13/16" hole	ap	1	Clamp, hot line, tap assembly
p		Connectors, as req'd	aq		Leads, #6 S.D. copper or equivalent
u	1/2	Clamp, guy, 3-bolt, 6" long			

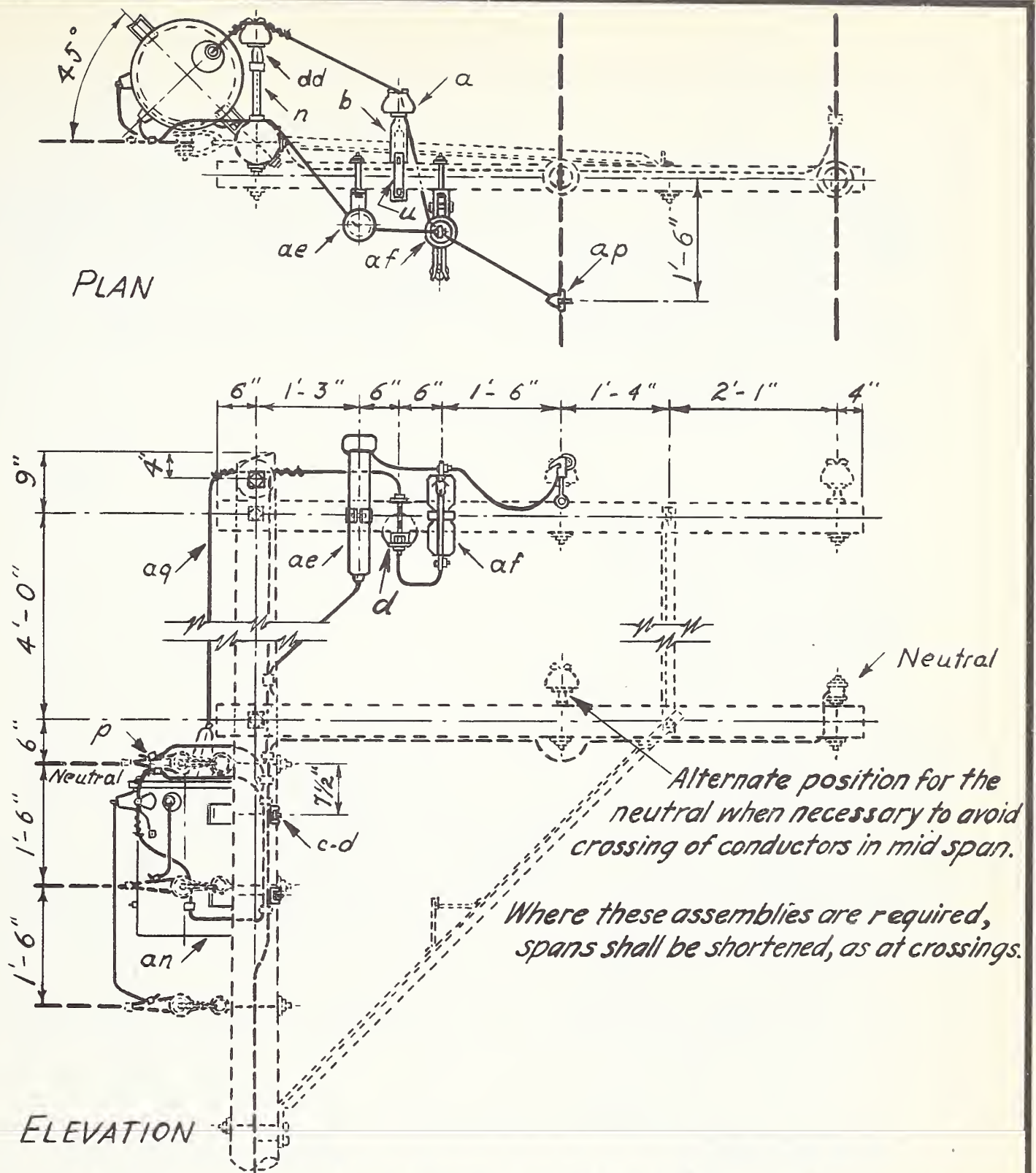
.....KV. PRIMARY, 3-PHASE 4-WIRE STAR  
CONVENTIONAL TRANSFORMER ON OUTER WIRE 0° TO 5° ANGLE

Scale: 1/2"=1'-0"

Date: June 10, 1948

NO.	REVISION	DATE
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G36-1 1/2 R



ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
a	2	Insulator, pin type	af	1	Cutout, fuse, single shot
b	1	Pin, pole top, 15"	an	1	Transformer, coordinated, conventional
c	4	Bolt, machine, $\frac{5}{8}$ " x required length	ap	1	Clamp, hot line, tap assembly
d	6	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{3}{16}$ " hole	aq		Leads, #6 S.D. copper or equiv.
n	1	Bolt, double arming, $\frac{5}{8}$ " x req'd. lgth	u	$\frac{1}{2}$	Clamp, guy, 3-bolt, 6" long
p		Connectors, as required	dd	1	Adapter, insulator
ae	1	Lightning Arrester			

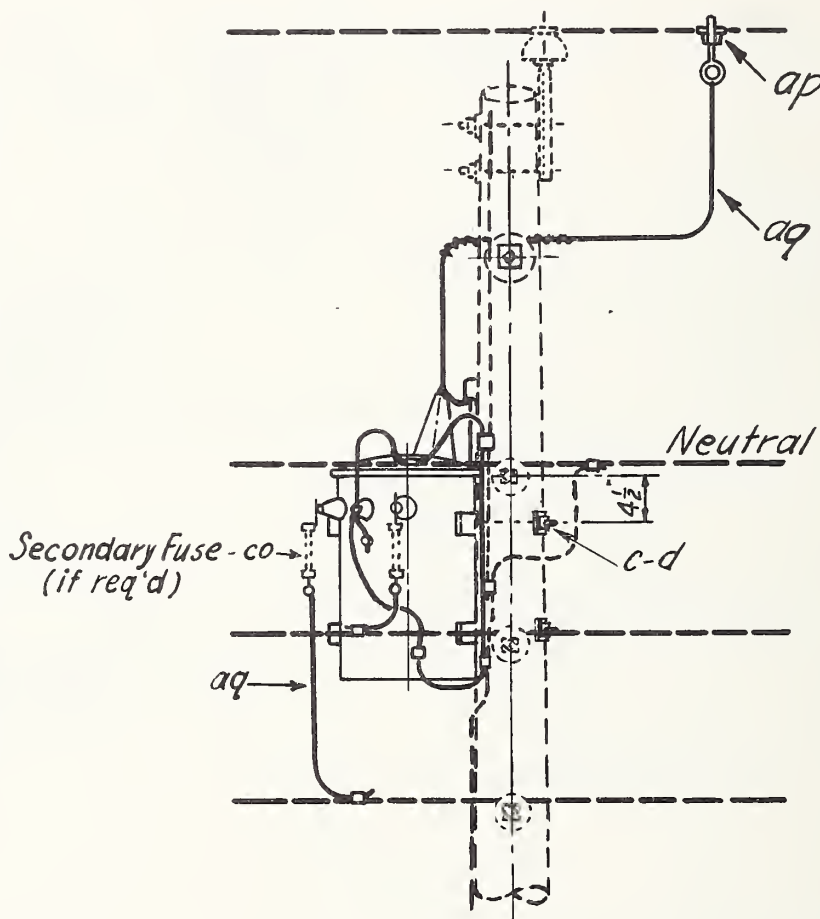
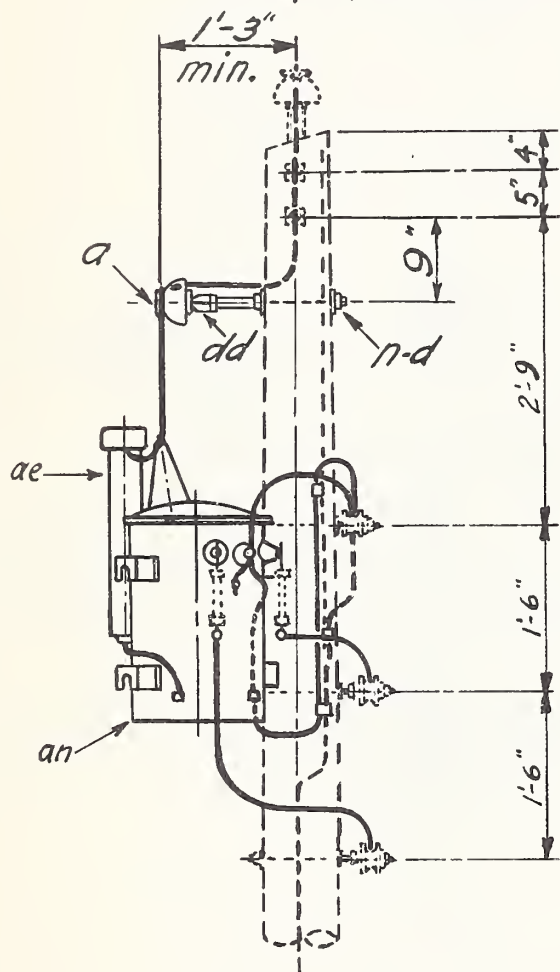
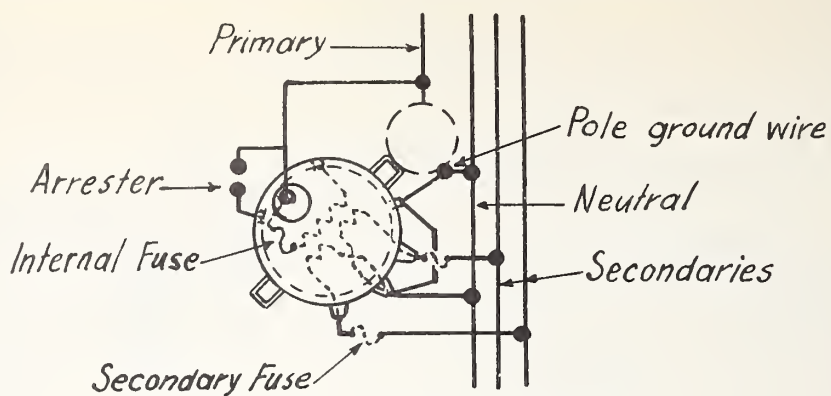
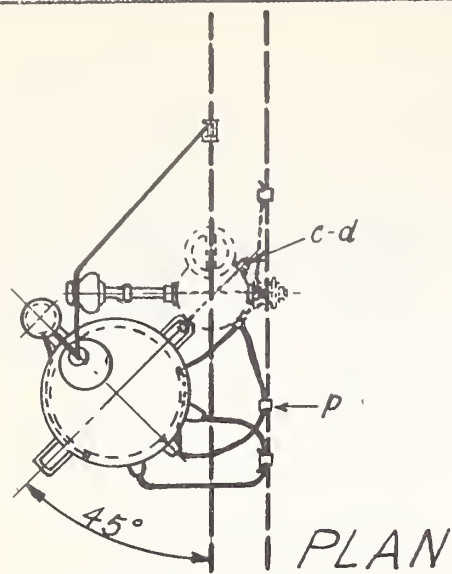
....KV PRIMARY, 3-PHASE 4-WIRE STAR  
CONVENTIONAL TRANSFORMER-SIDEARM CONSTRUCTION

Scale:  $\frac{1}{2}$ " = 1'-0"

Date: Nov. 24, 1947

1	Minor changes	8-18%
No.	REVISION	Date:

G37-1 $\frac{1}{2}$ R



ITEM	N <sup>o</sup> REQ'D.	MATERIAL	ITEM	N <sup>o</sup> REQ'D.	MATERIAL
a	1	Insulator, pin type	ap	1	Clamp, hot line, tap assembly
c	2	Bolt, machine, $\frac{5}{8}$ " x req'd. length	aq		Leads, #6 S.D. Copper or equiv.
d	4	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole	dd	1	Adapter, Insulator, $\frac{5}{8}$ "
n	1	Bolt, double arming, $\frac{5}{8}$ " x req'd. length			
p		Connectors, as req'd.			
ae	1	Lightning Arrester			
an	1	Transformer, coordinated, conven.			

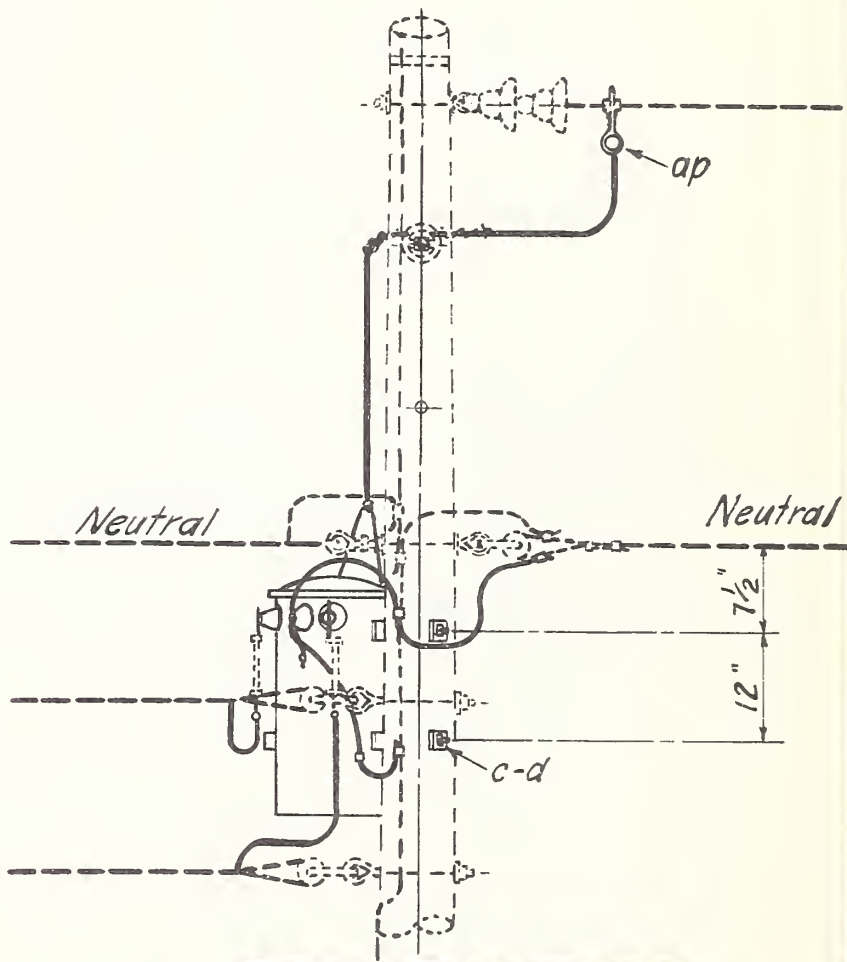
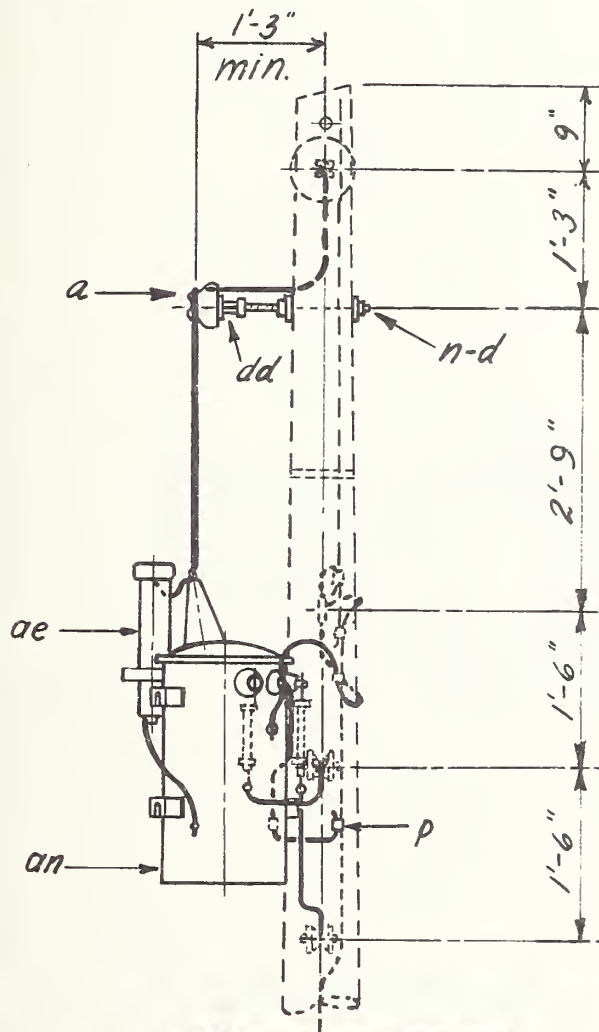
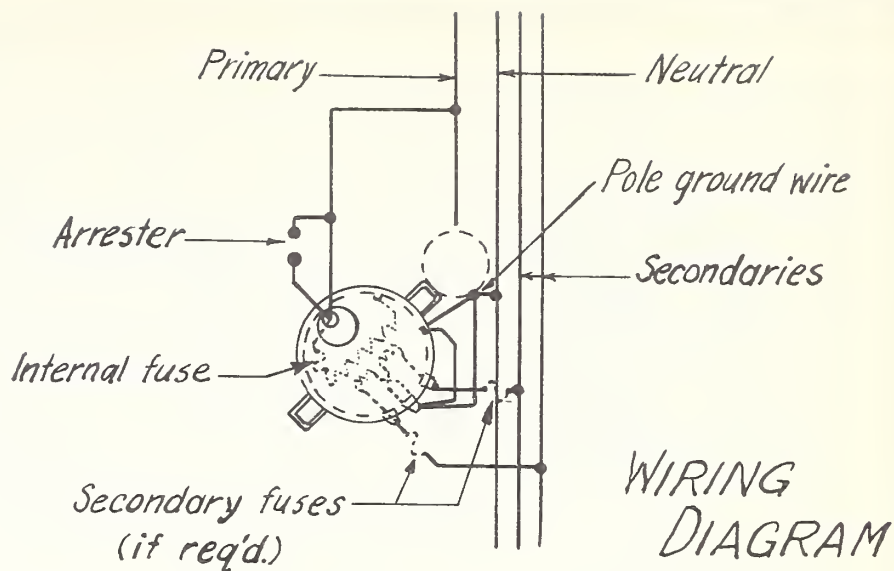
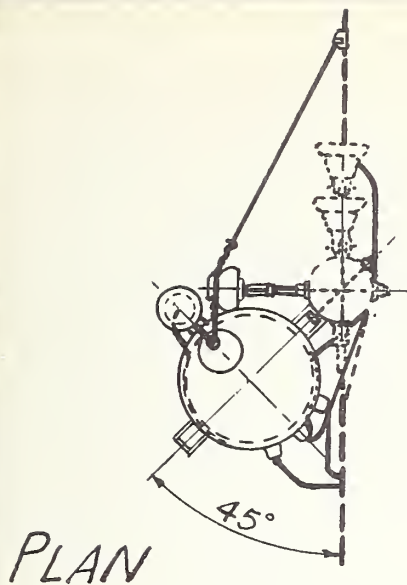
---KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
CONVENTIONAL TRANSFORMER WITH INTERNAL PRIMARY FUSE  
(SECONDARY FUSES OPTIONAL) AT 0° TO 5° ANGLE.

Scale:  $\frac{1}{2}$ "=1'-0"

Date: June 8, 1948

No. REVISIONS DATE

G55-1 $\frac{1}{2}$  R



ITEM	N <sup>o</sup> REQ'D	MATERIAL	ITEM	N <sup>o</sup> REQ'D	MATERIAL
a	1	Insulator, pin type	ae	1	Lightning Arrester
c	2	Bolt, machine, $\frac{5}{8}$ " x req'd. length	an	1	Transformer, coordinated, conventional
d	4	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ hole	ap	1	Clamp, hot line, tap assembly
n	1	Bolt, double arming, $\frac{5}{8}$ " x req'd. length	aq		Leads, #6 S.D. Copper or equiv.
p		Connectors, as req'd.	dd	1	Adapter, Insulator, $\frac{5}{8}$ "

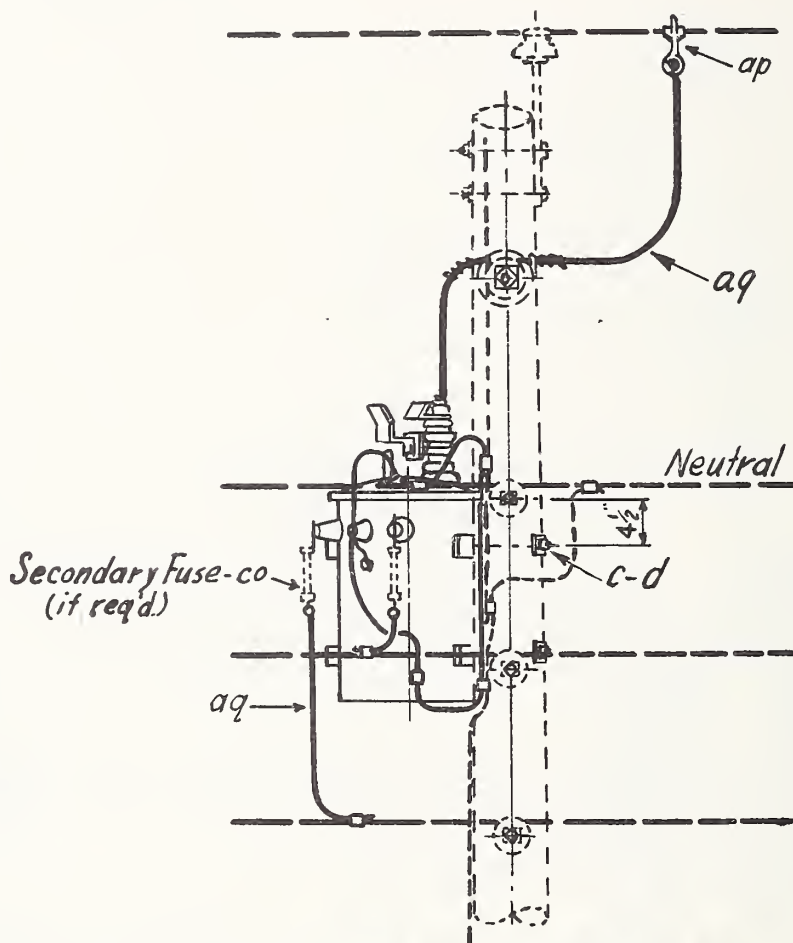
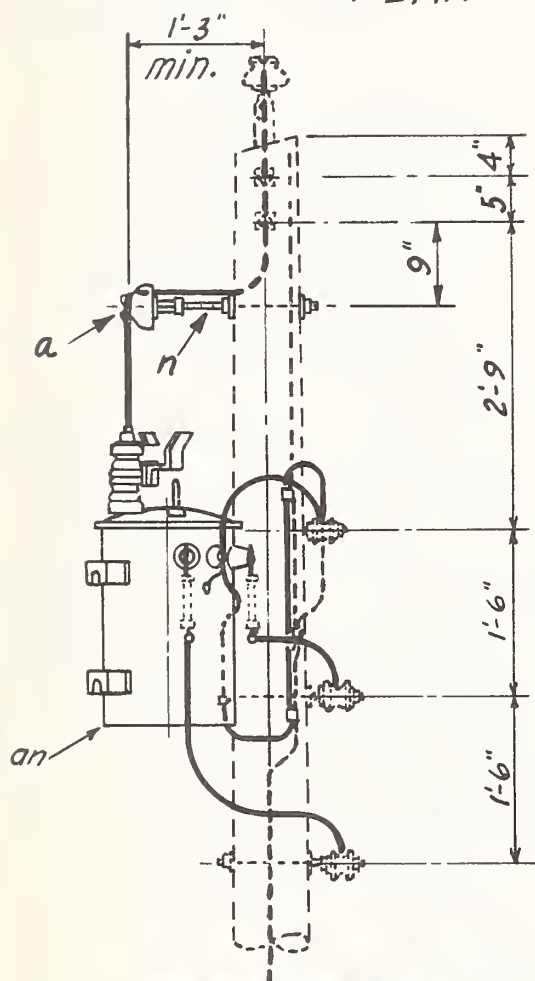
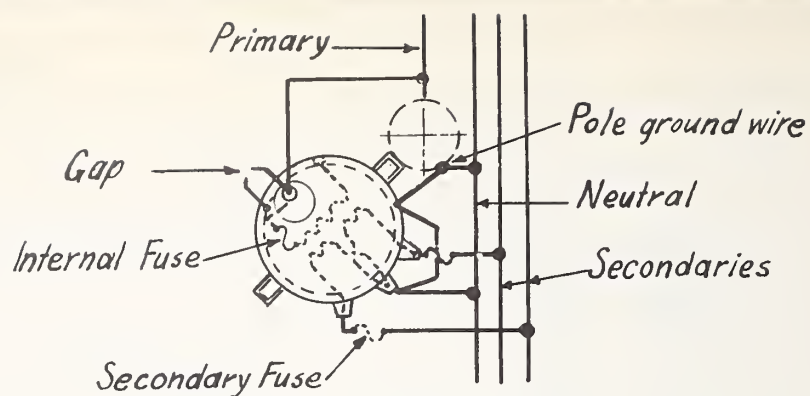
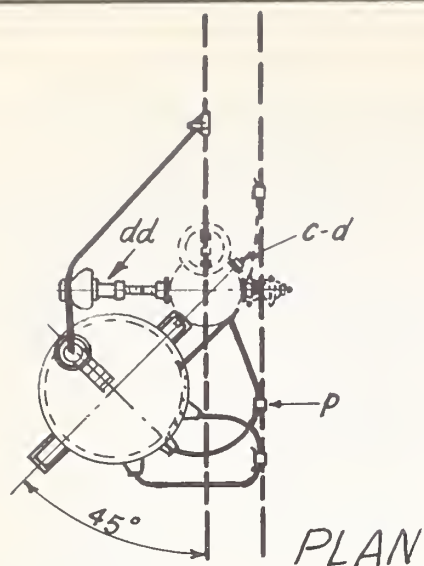
...KV. PRIMARY, 1 PHASE 2-WIRE, NEUTRAL GROUNDED  
CONVENTIONAL TRANSFORMER WITH INTERNAL PRIMARY FUSE  
(SECONDARY FUSES OPTIONAL) AT DEADEND.

Scale:  $\frac{1}{2}$ " = 1'-0"

Date: June 12, 1948

G56-1 $\frac{1}{2}$  R

No.	REVISION	DATE
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ITEM	N <sup>o</sup> REQ'D.	MATERIAL	ITEM	N <sup>o</sup> REQ'D.	MATERIAL
a	1	Insulator, pin type	ap	1	Clamp, hot line, tap assembly
c	2	Bolt, machine, 5/8" x req'd. length	aq		Leads, #6 S.D. Copper or equiv.
d	4	Washer, 2 1/4 x 2 1/4 x 3/16, 13/16 hole	dd	1	Adapter, insulator, 5/8"
n	1	Bolt, double arming, 5/8" x req'd. length	an	1	Transformer, coordinated, conventional
p		Connectors, as req'd.			

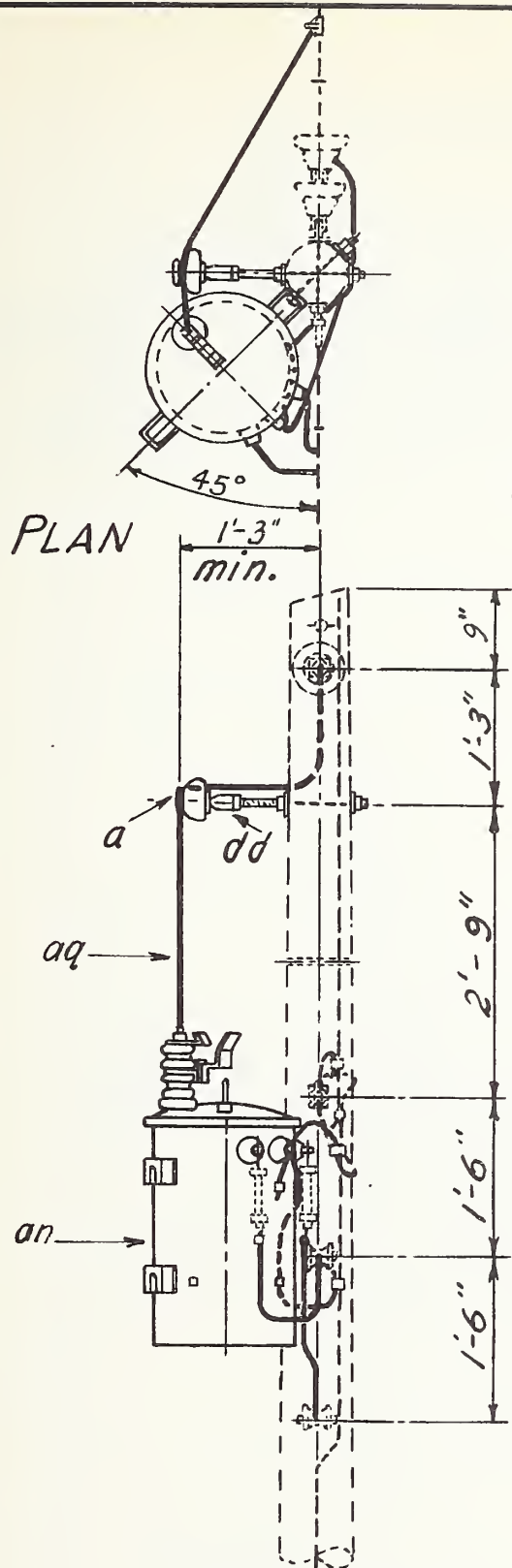
K.V. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
CONVENTIONAL TRANSFORMER WITH INTERNAL PRIMARY FUSE AND  
DOUBLE GAP (SECONDARY FUSES OPTIONAL) AT 0° TO 5° ANGLE

Scale: 1/2"=1'-0"

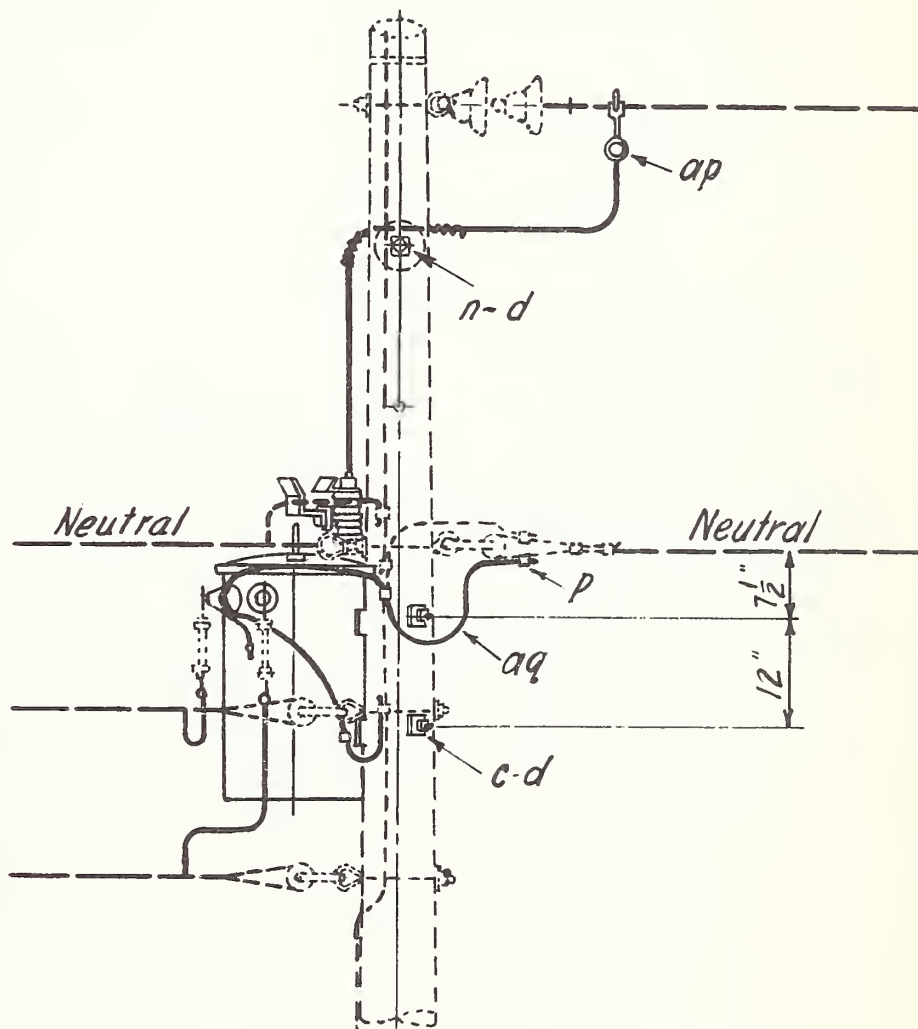
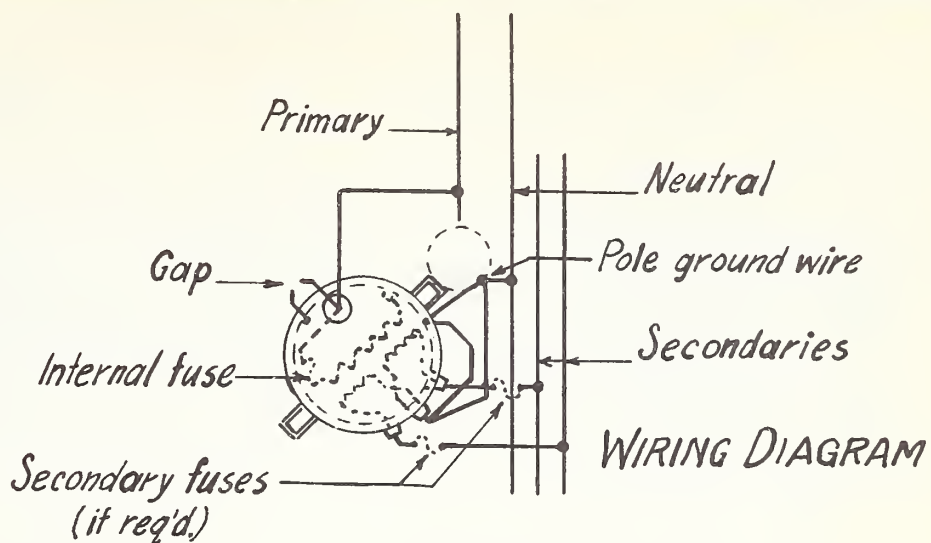
Date: June 9, 1948

No. REVISIONS DATE

G65-1 1/2 R



ELEVATION



SIDE ELEVATION

ITEM	N <sup>o</sup> REQ'D	MATERIAL	ITEM	N <sup>o</sup> REQ'D	MATERIAL
<i>a</i>	1	Insulator, pin type	<i>an</i>	1	Transformer, coord, conventional
<i>c</i>	2	Bolt, machine, 5/8" x req'd. length	<i>ap</i>	1	Clamp, hot line, tap assembly
<i>d</i>	4	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	<i>aq</i>		Leads, #6 S.D. Copper or equiv.
<i>n</i>	1	Bolt, double arming, 5/8" x req'd. l'th	<i>dd</i>	1	Adapter, Insulator, 5/8"
<i>p</i>		Connectors, as req'd.			

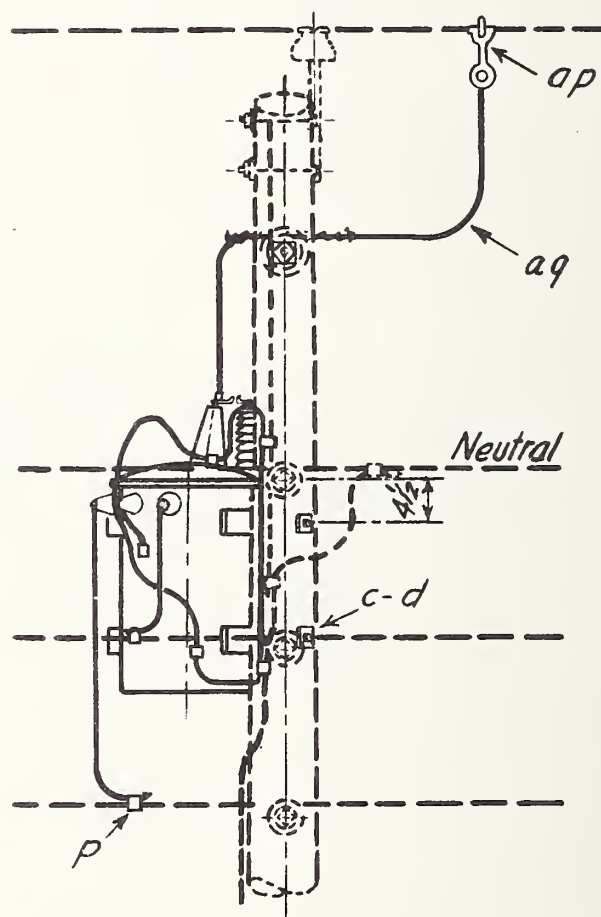
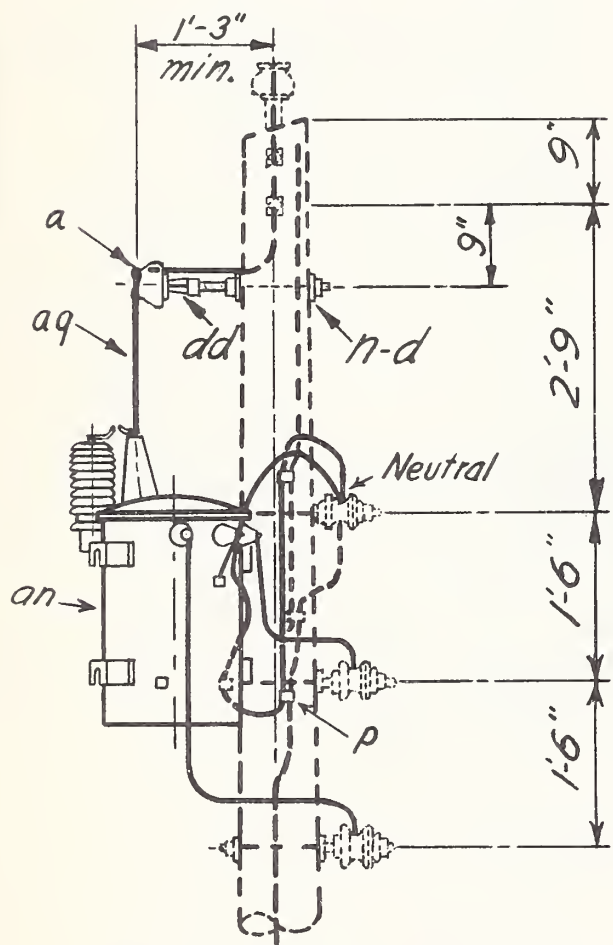
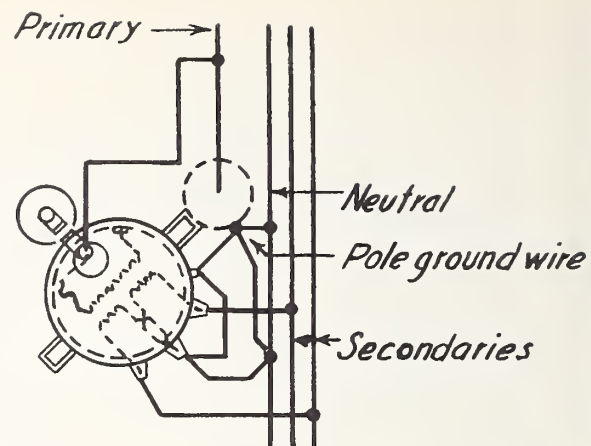
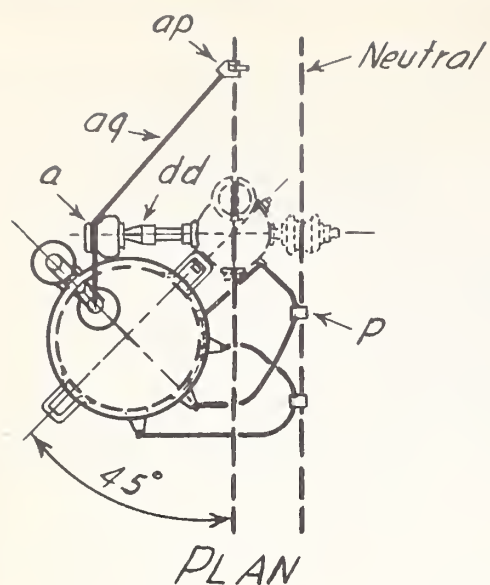
-----KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
CONVENTIONAL TRANSFORMER WITH INTERNAL PRIMARY FUSE  
AND DOUBLE GAP (SECONDARY FUSES OPTIONAL) AT DEAD END

Scale: 1/2" = 1'-0"

Date: June 12, 1948

No.	REVISIONS	DATE
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G66-1 1/2 R



ITEM	NO. REQD.	MATERIAL	ITEM	NO. REQD.	MATERIAL
a	1	Insulator, pin type	an	1	Transformer, self protected type
c	2	Bolt, machine, $\frac{5}{8}$ " x req'd. length	ap	1	Clamp, hot line, tap assembly
d	4	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole	aq		Leads, #6 SD copper or equiv.
n	1	Bolt, double arming, $\frac{5}{8}$ " x req'd. lgth.	dd	1	Adapter, insulator, $\frac{5}{8}$ "
p		Connectors, as req'd.			

---KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
SELF PROTECTED TRANSFORMER AT 0° TO 5° ANGLE

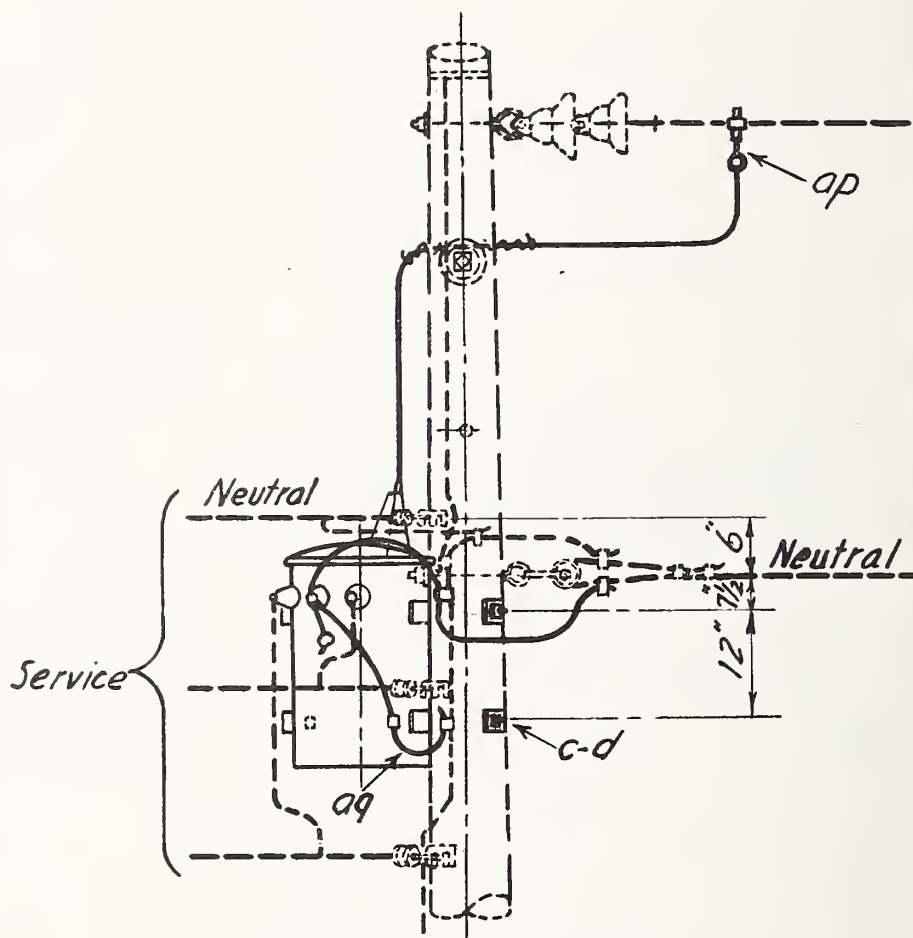
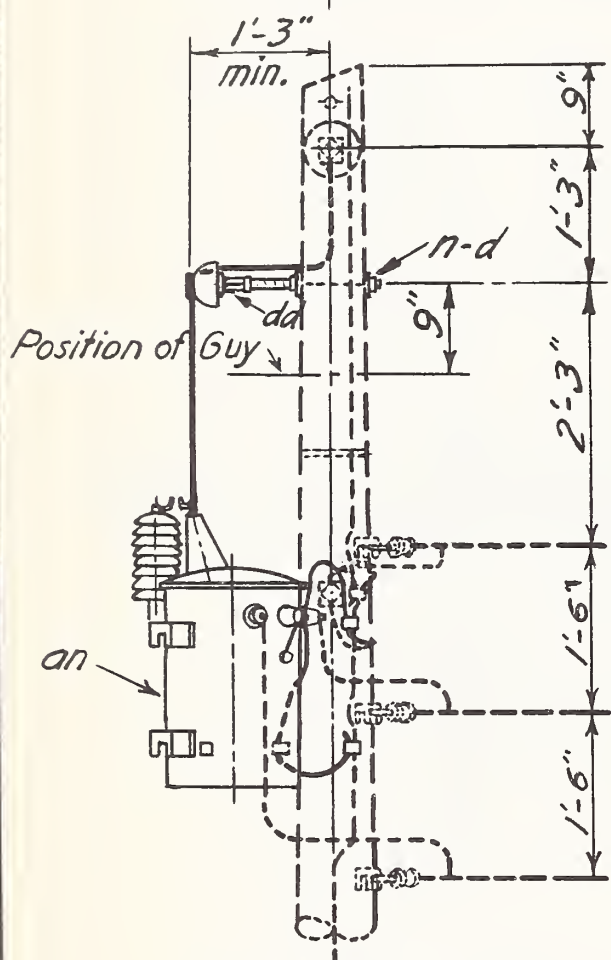
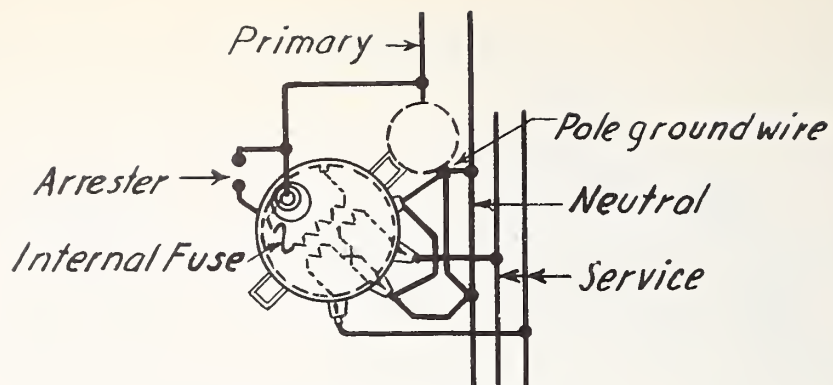
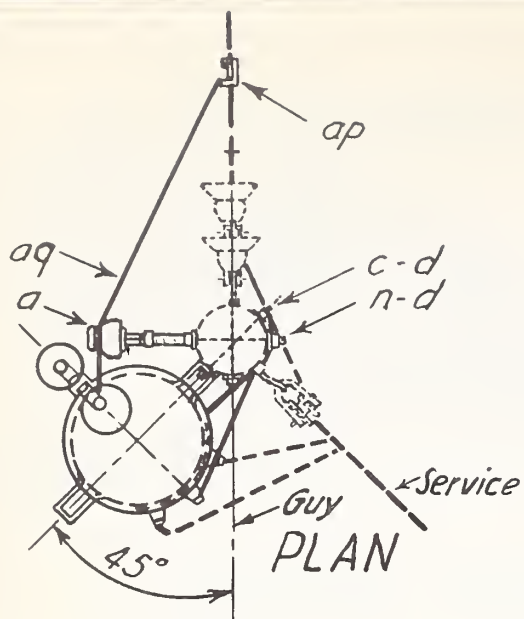
Scale:  $\frac{1}{2}$ " = 1'-0"

Date: Mar. 26, 1948

G105-1½ R

NO. REVISION DATE:





ITEM	No. REQ'D	MATERIAL	ITEM	No. REQ'D	MATERIAL
a	1	Insulator, pin type	an	1	Transformer, self protected type
c	2	Bolt, machine, 5/8" x req'd. length	ap	1	Clamp, hot line, tap assembly
d	4	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	aq		Leads, #6 S.D. Copper or equiv.
n	1	Bolt, double arming, 5/8" x req'd. length	dd	1	Adapter, insulator, 5/8"
p		Connectors, as req'd.			

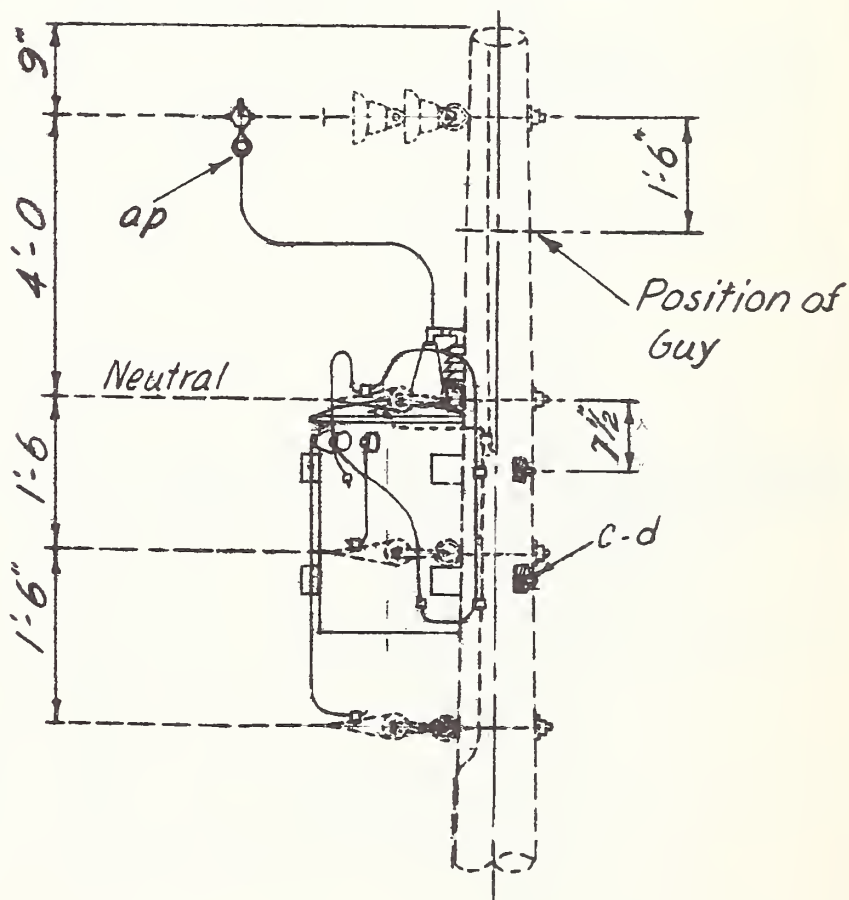
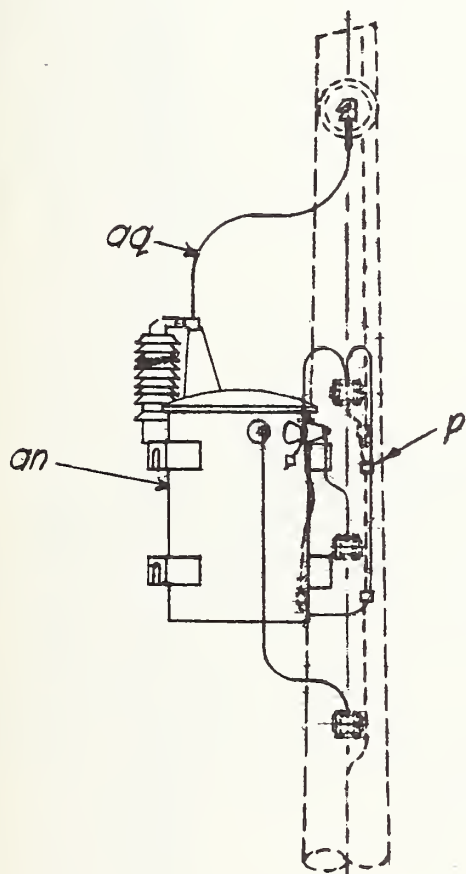
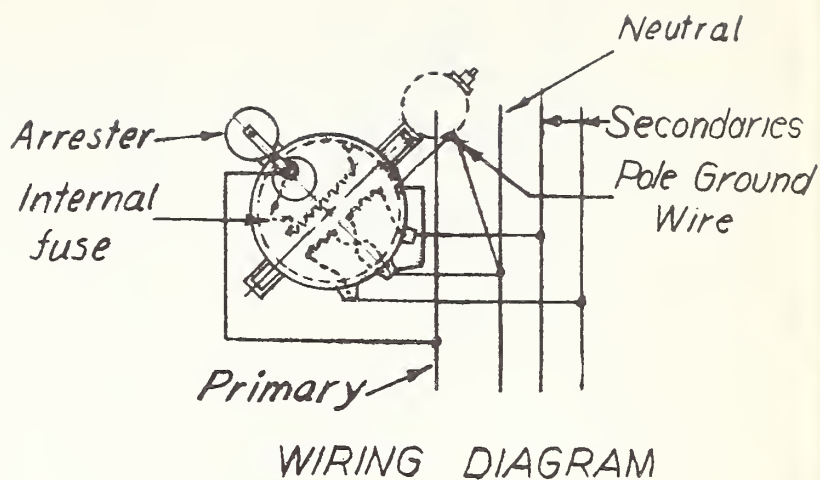
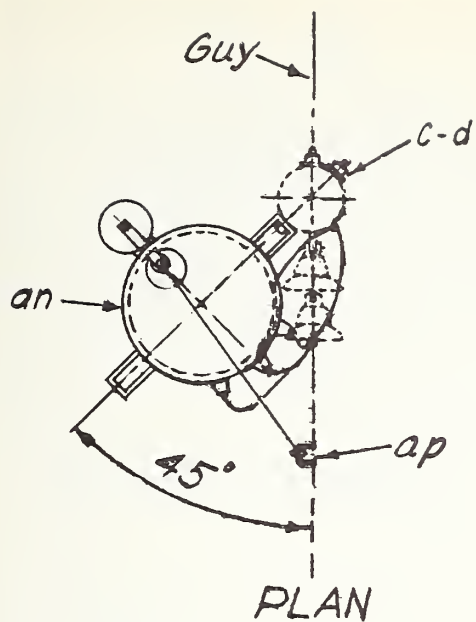
-----KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
SELF PROTECTED TRANSFORMER AT DEADEND

Scale: 1/2" = 1'-0"

Date: Mar. 23, 1948

No. REVISION DATE

G106-1 1/2 R



ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
c	2	Bolt, machine, $\frac{5}{8}$ " x req'd length	ap	1	Clamp, hot line tap assembly
d	2	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{1}{16}$ " hole	aq		Jumpers and leads as req'd.
p		Connectors, as req'd			
an	1	Transformer, self-protected type			

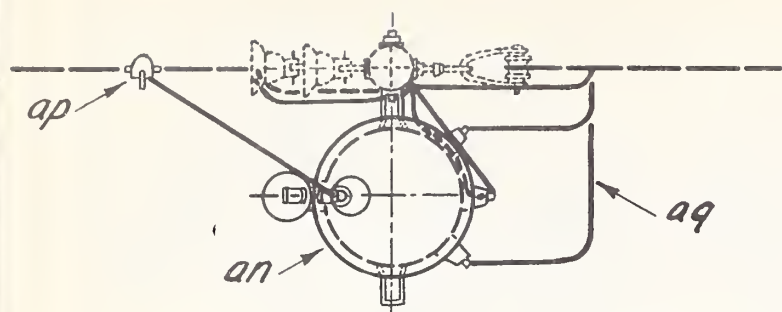
---KV. PRIMARY, 1 PHASE 2 WIRE, NEUTRAL GROUNDED  
SELF-PROTECTED TRANSFORMER AT DEADEND

Scale:  $\frac{1}{2}$ " = 1'-0"

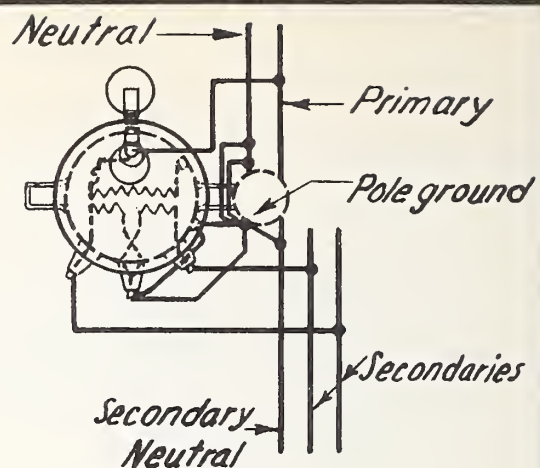
Date: July 20, 50

No. REVISION DATE

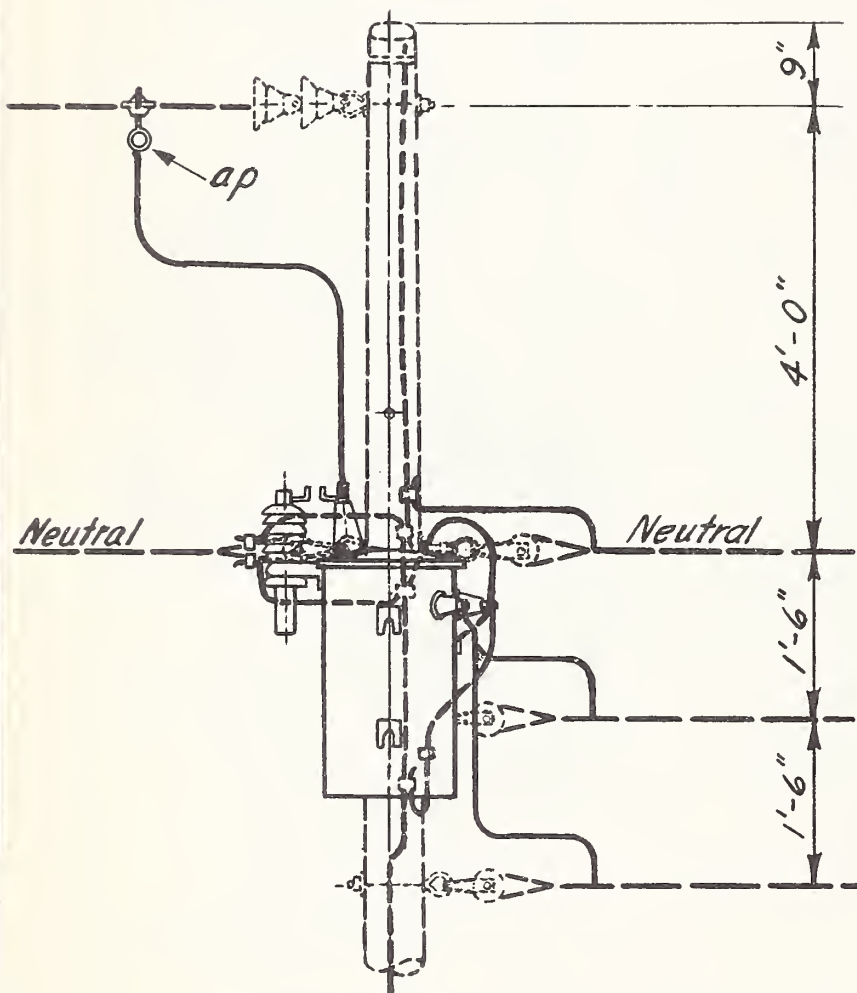
6106-1 $\frac{1}{2}$ A1



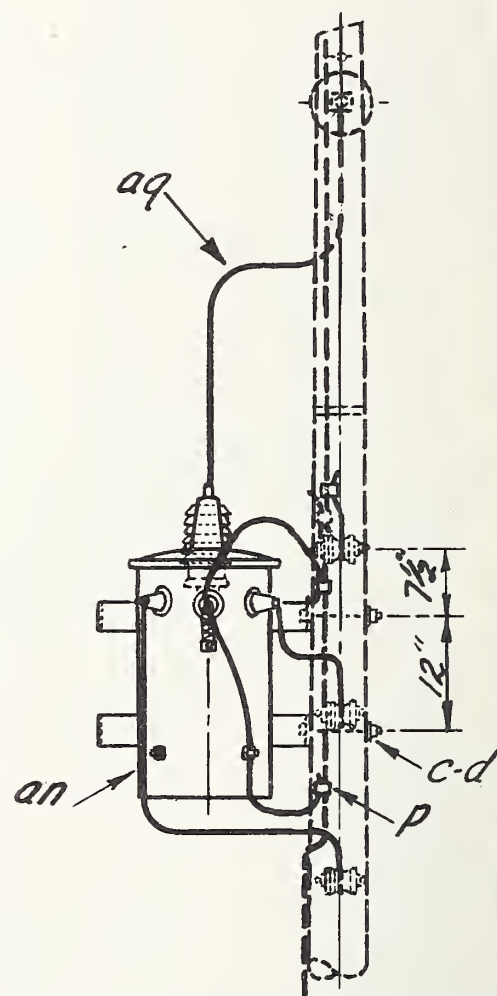
PLAN



WIRING DIAGRAM



ELEVATION



SIDE ELEVATION

ITEM	NO. REQ'D.	MATERIAL	ITEM	NO. REQ'D.	MATERIAL
c	2	Bolt, machine, $\frac{5}{8}$ " x req'd. length	ap	1	Clamp, hot line, tap assembly
d	2	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole	aq		Leads, #6 S.D. Copper or equiv.
p		Connectors, as req'd.			
an	1	Transformer, self-protected type			

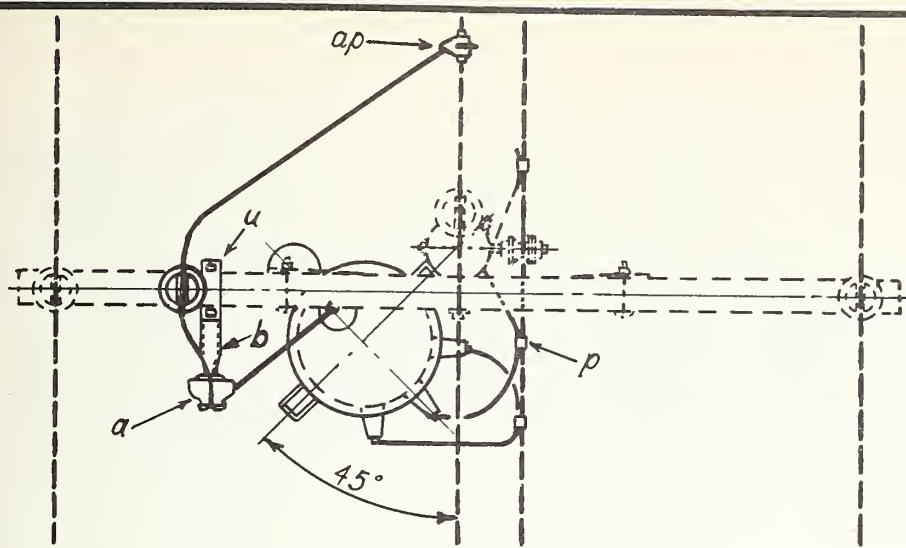
----- K.V. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
SELF PROTECTED TRANSFORMER AT DEADEND  
SECONDARY CONTINUING

Scale:  $\frac{1}{2}$ " = 1'-0"

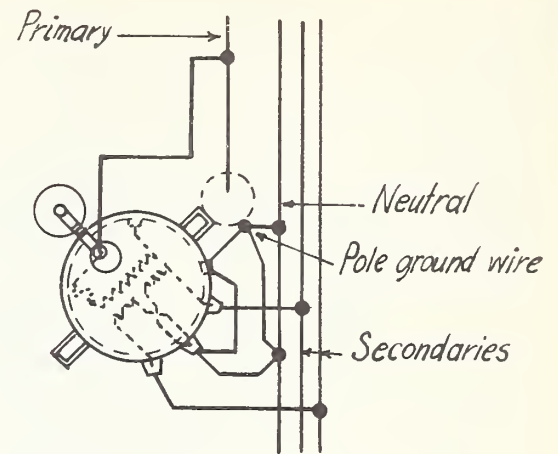
Date: July, 15, 1948

NO.	REVISION	DATE	
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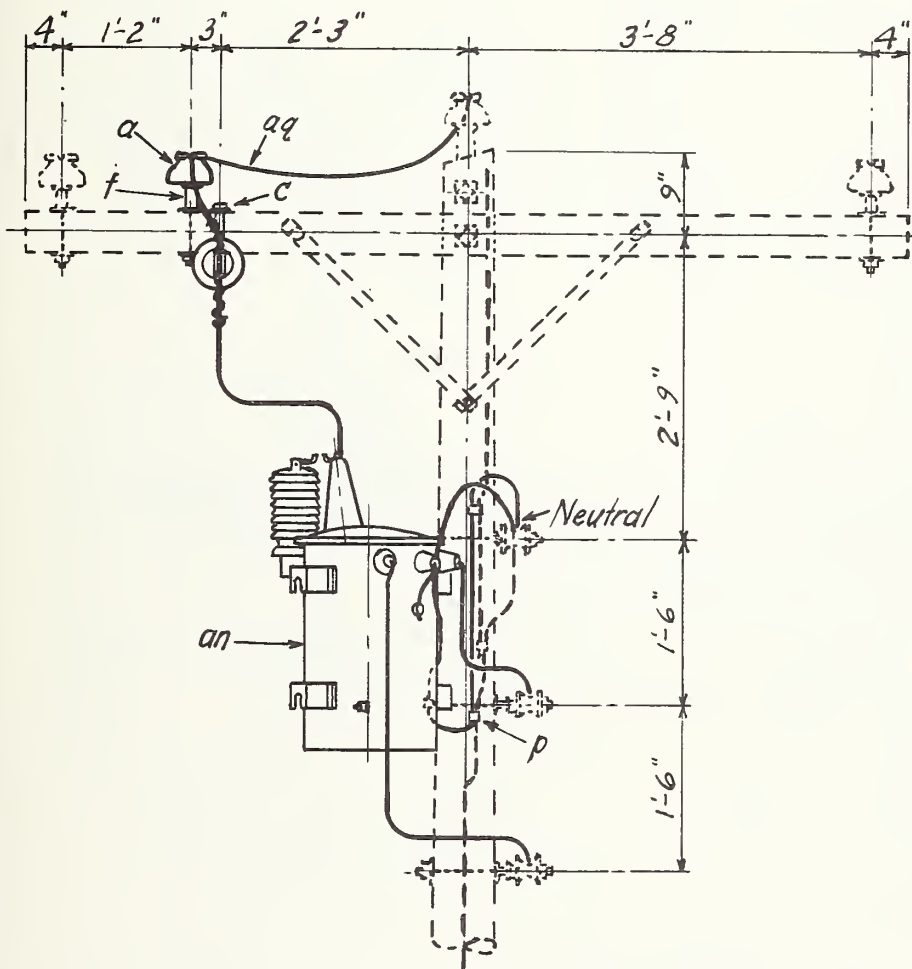
G126-1 1/2



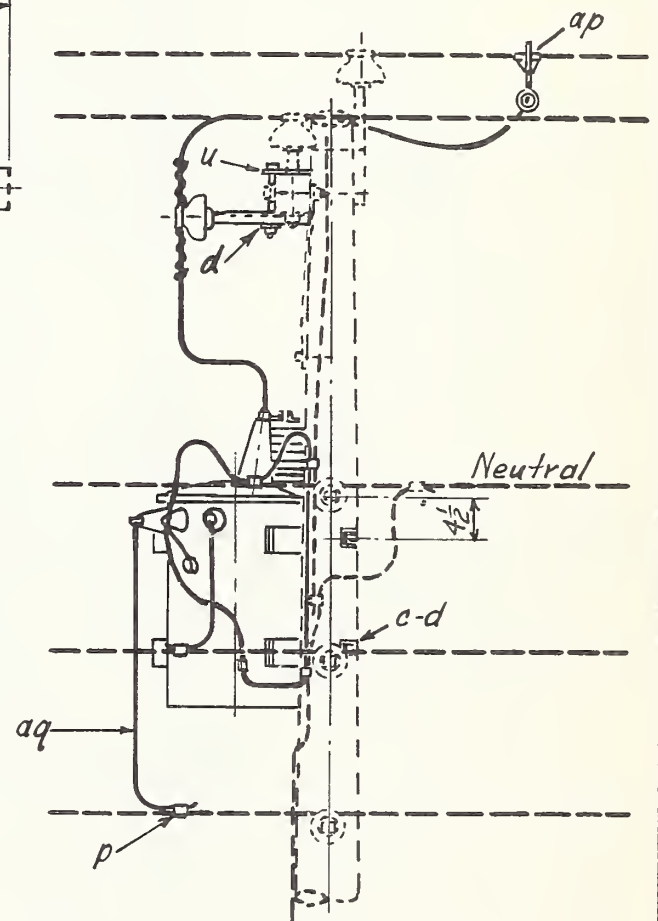
PLAN



WIRING DIAGRAM



ELEVATION



SIDE ELEVATION

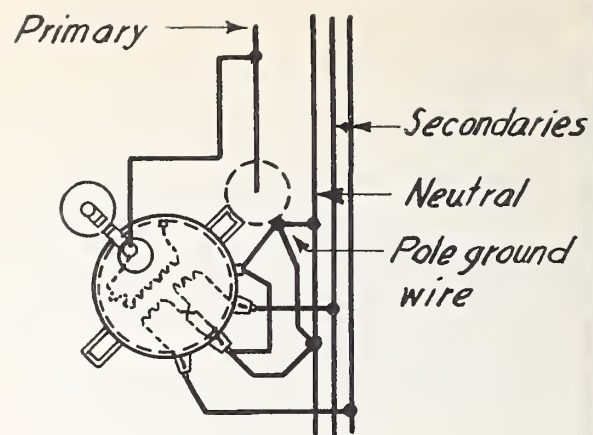
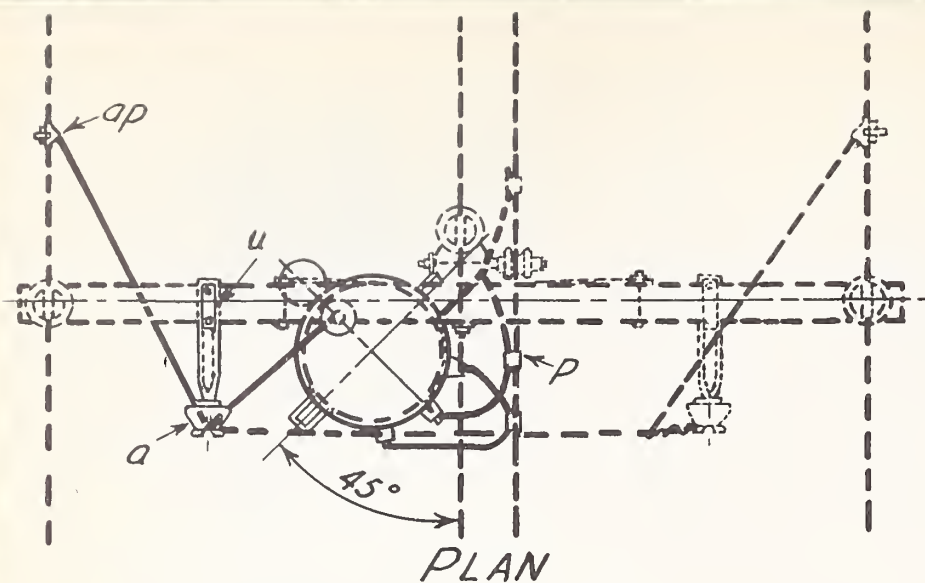
ITEM	No. REQ'D.	MATERIAL	ITEM	No. REQ'D.	MATERIAL
a	2	Insulator, pin type	p		Connectors, as req'd.
b	1	Pin, pole top, 15"	u	1/2	Clamp, guy, 3-bolt, 6" lg.
c	4	Bolt, machine, 5/8"x req'd. length	an	1	Transformer, self-protected type
d	4	Washer, 2 1/4"x 2 1/4"x 3/16", 13/16" hole	ap	1	Clamp, hot line, tap assembly
f	1	Pin, crossarm, steel, 5/8"x 10 3/4"	aq		Leads, #6 S.D. copper or equiv.

-----KV. PRIMARY, 3-PHASE 4-WIRE STAR  
SELF-PROTECTED TRANSFORMER ON MIDDLE WIRE AT 0° TO 5° ANGLE

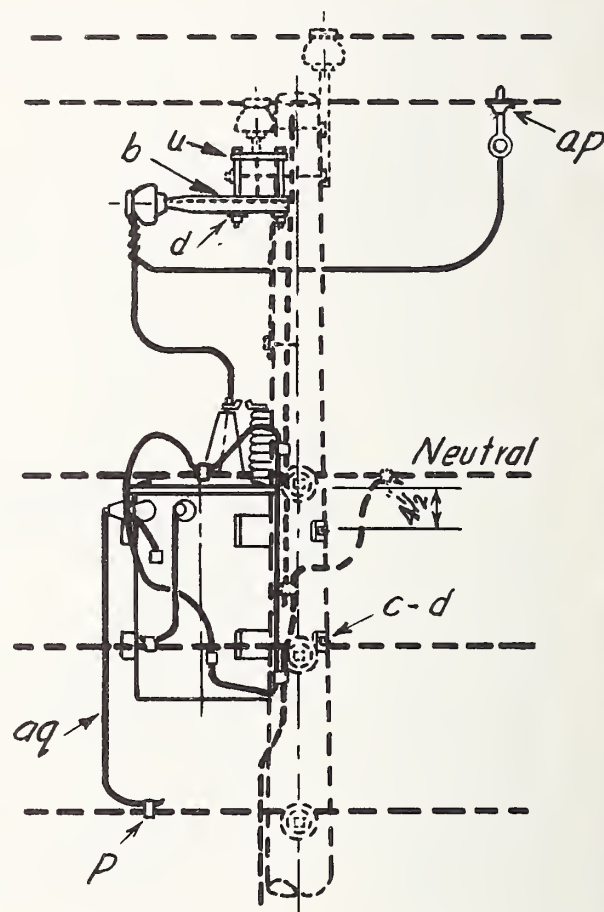
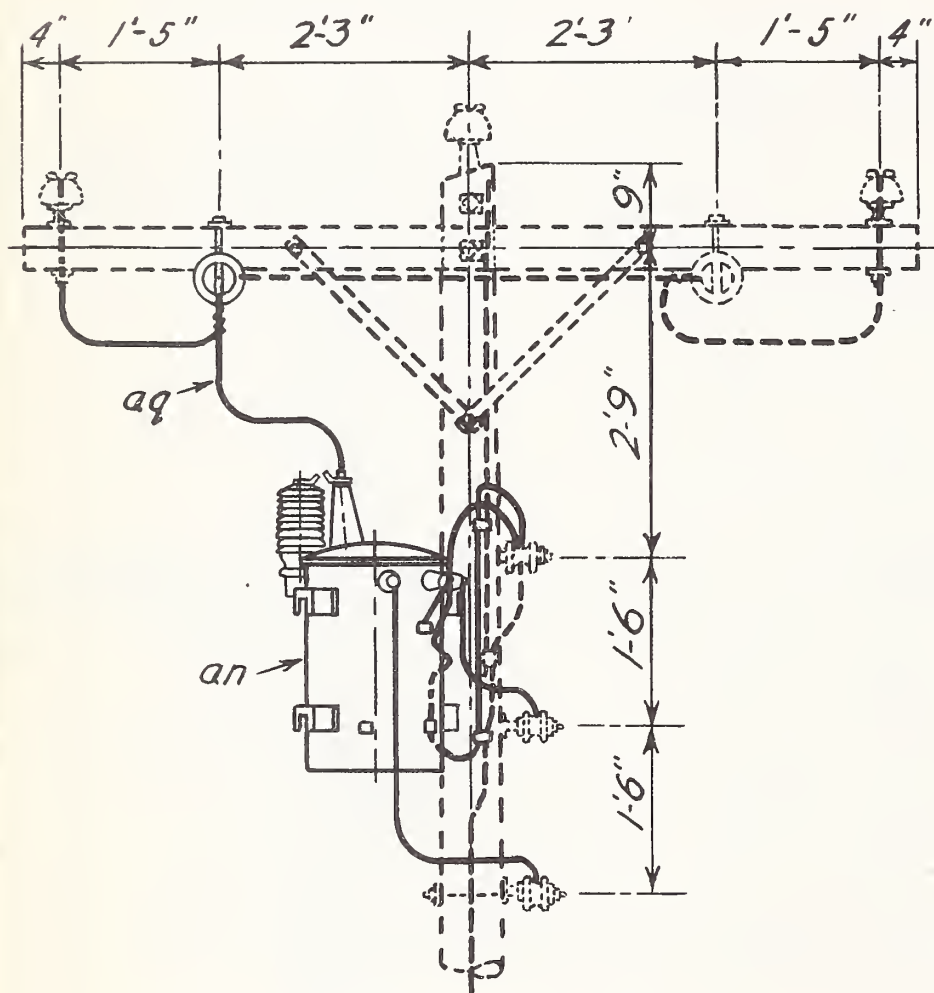
Scale: 1/2" = 1'-0"

Date: July 30, 1948

NO.	REVISION	DATE	G135-1 1/2 R
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WIRING DIAGRAM



ITEM	NO. REQ'D.	MATERIAL	ITEM	NO. REQ'D.	MATERIAL
a	1	Insulator, pin type	p		Connectors, as req'd.
b	1	Pin, pole top, 15"	u	1/2	Clamp, guy, 3-bolt, 6" lg.
c	4	Bolt; machine, 5/8"x req'd. lgth.	an	1	Transformer, self-protected type
d	4	Washer, 2 1/4"x 2 1/4"x 3/16" - 3/16" hole	ap	1	Clamp, hot line, tap assembly
			aq		Leads, #6 S.D. copper or equiv.

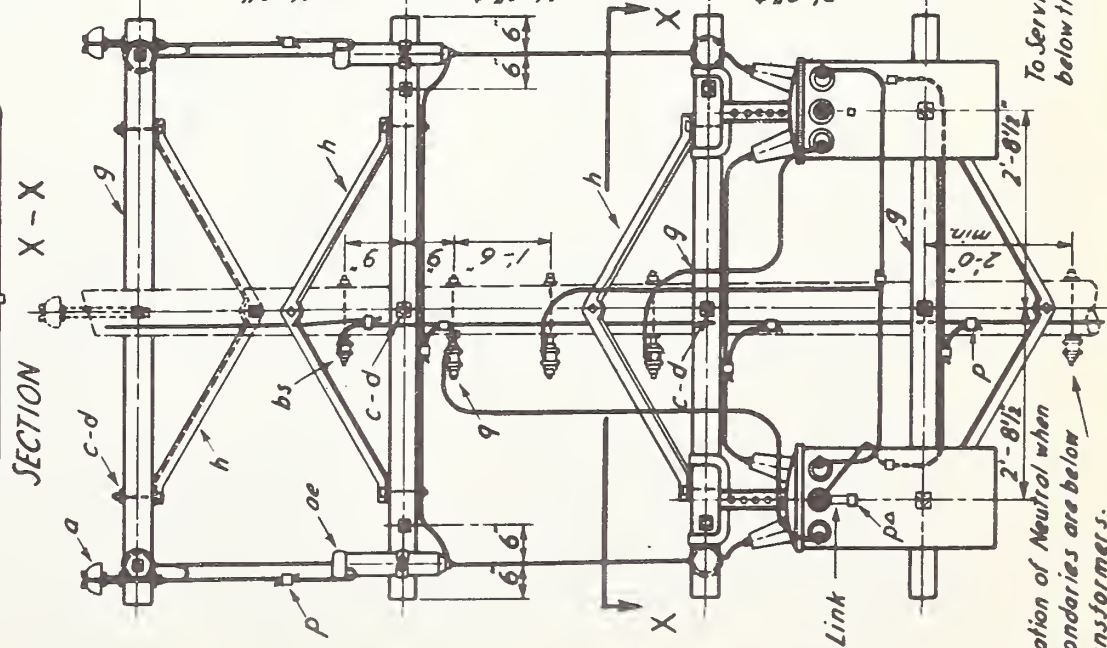
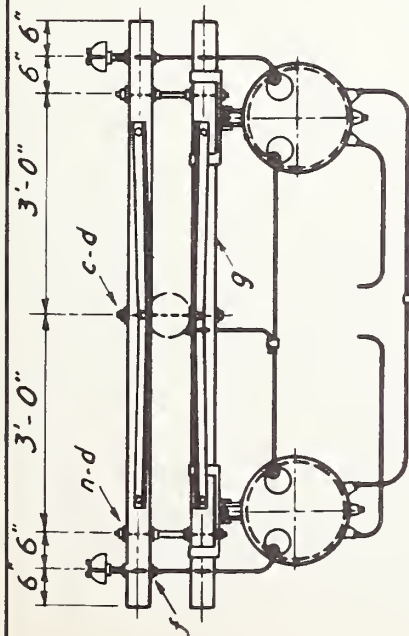
KV PRIMARY, 3-PHASE 4-WIRE STAR  
SELF-PROTECTED TRANSFORMER ON OUTER WIRE 0°-5° ANGLE

Scale 1/2" = 1'-0"

Date: Mar. 31, 1948

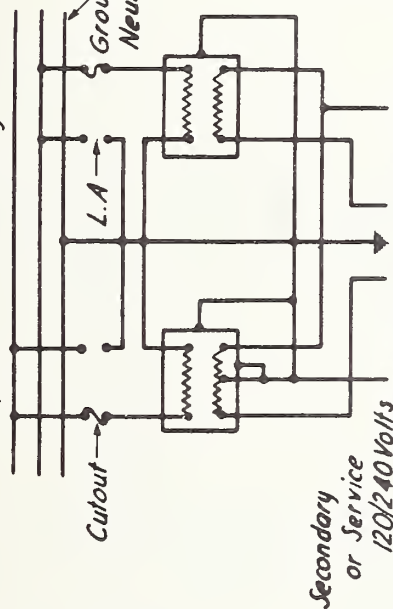
NO. REVISION DATE

6136-1 1/2 R

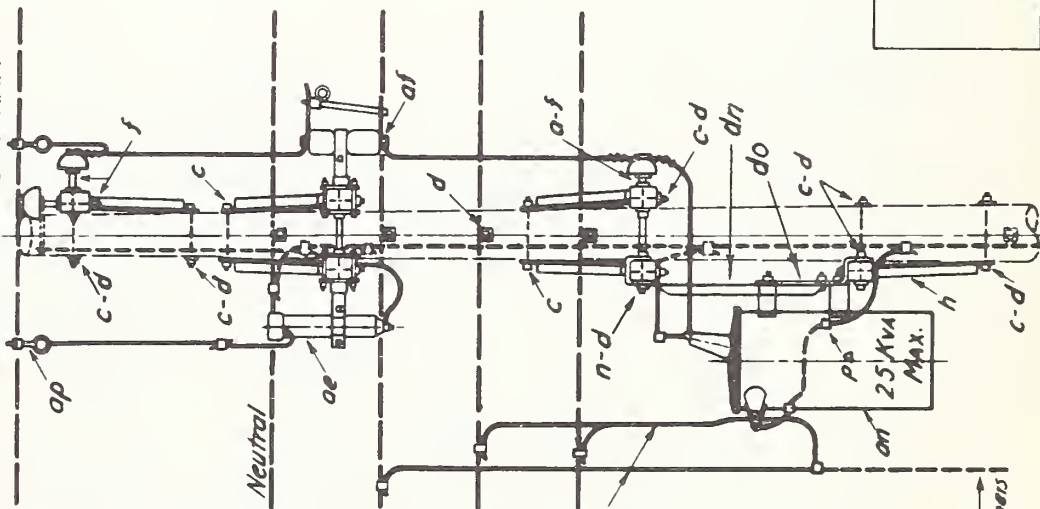


Location of Neutral when secondaries are below transformers.

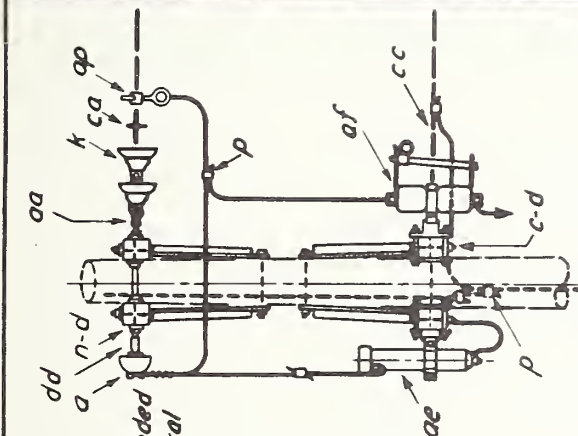
7.2/12.5 K. V. Primary



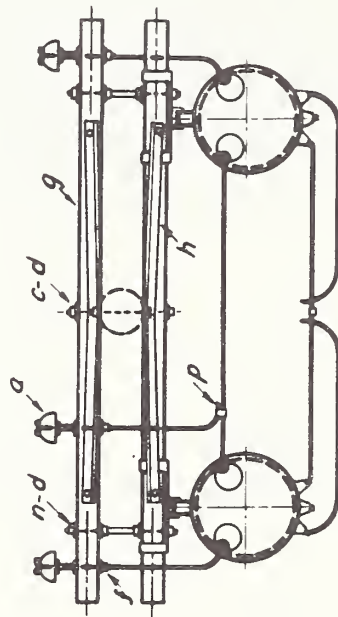
WIRING DIAGRAM



SIDE ELEVATION  
(DEADEND ARRANGEMENT)



TYPICAL PLAN SECTION X-X FOR  
DELTA PRIMARY CONNECTION



ITEM NO.	MATERIAL
a	Insulators, pin type
c	Bolts, machine, 3/8" req'd length
d	Bolts, machine, 1/2" req'd length
f	Washer, 2 1/4 x 1 1/2 x 3/16" hole
g	Pin, crossarm, round, 1 1/2" dia 9 1/2" hole
h	Pin, crossarm, steel, 3/8" x 10 1/2"
n	Crossarm, 3 1/2" x 4 1/2" x 8'-0" long
p	Brace, angle, 1 1/2 x 1 1/2 x 3/16, 60° span
q	Bolt, double arming, 1/2" req'd lg.
r	Connectors, as req'd.
s	Bolt, double upset, insulated
t	Rod, ground
u	Lightning Arrestor
v	Cutout fuse, single shot
w	Transformer
x	Clamp, hot line, tap assembly
y	Leads, # 6 S.D. or equivalent
z	Bolt, single upset, insulated
aa	Ground wire assembly
ab	Hanger, T-crossarm, as req'd.
ac	Kicker bracket
ad	Connector, solderless
ae	Link, neutral grounding
af	Clamp, ground rod

\* Specify these items to be furnished by the manufacturer.

NOTES:

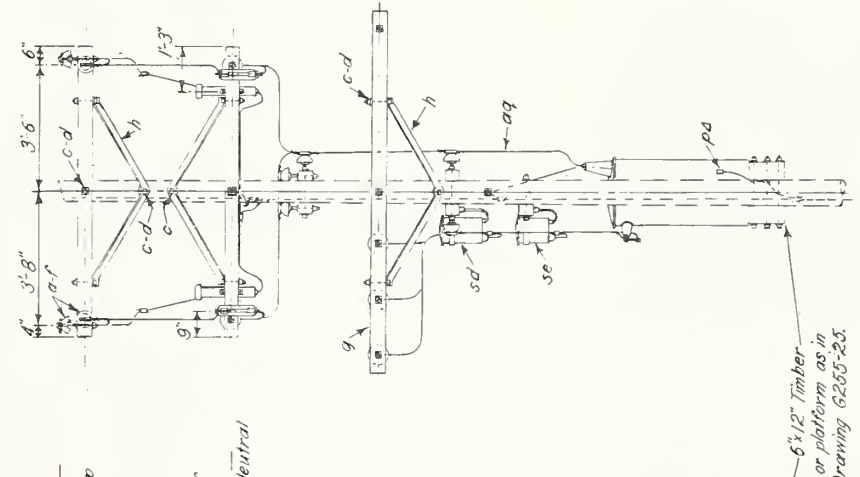
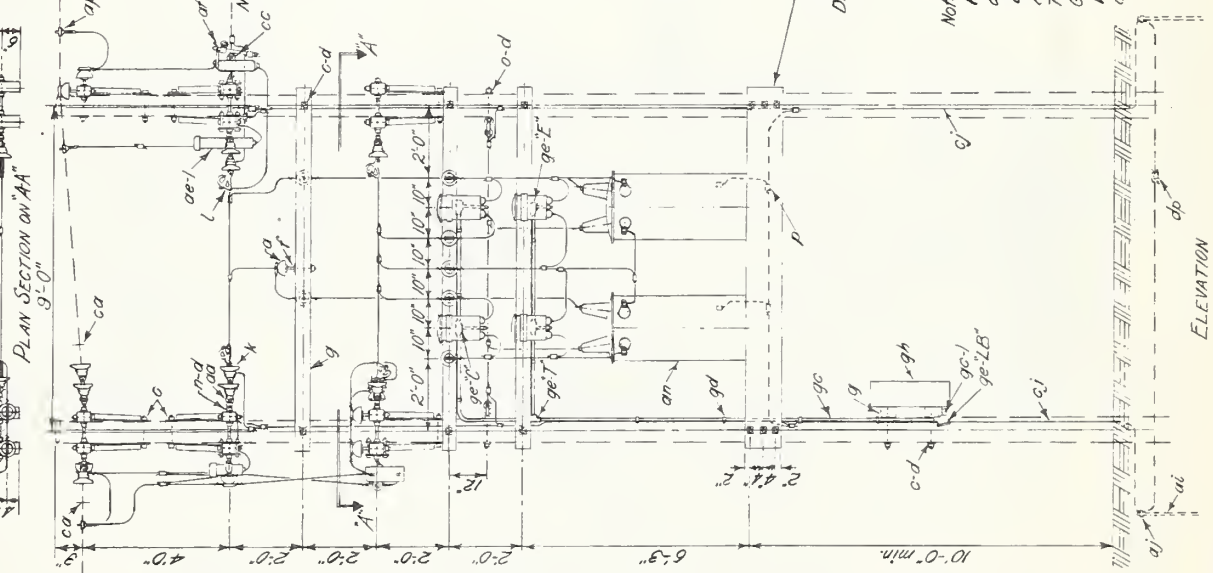
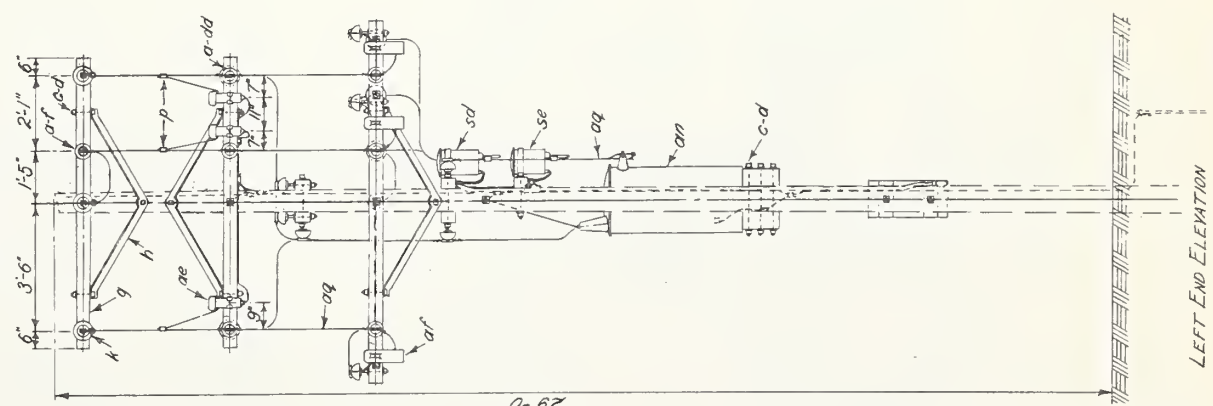
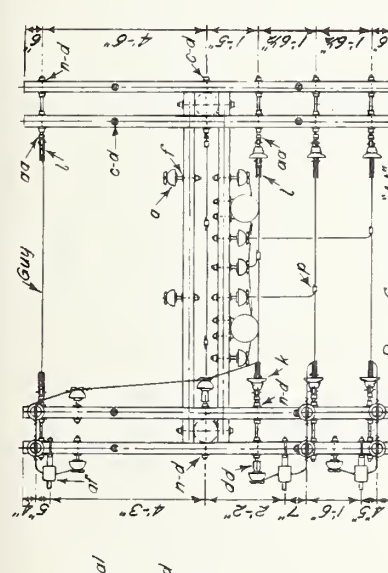
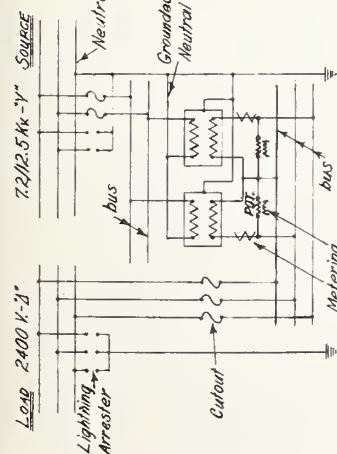
All tanks to be grounded.  
Secondary neutral shall be disconnected from one tank and not grounded.  
Secondary conductors shall be below transformers when communication wires are on the same pole.  
For metering assemblies refer to MB-1 for outdoor type instrument transformers and MB-2 for indoor instrument transformers.

K.V. PRIMARY 3-PHASE 4-WIRE STAR  
TWO CONVENTIONAL TRANSFORMERS  
(POLE MOUNTED)

Scale: 1/2"=1'-0"  
Date: May 4, 1940  
G 205-5

REVISIONS  
No. Date





LIST OF MATERIAL	
ITEM NO.	MATERIAL
a	30 Insulator, pin type
c	22 Bolt machine, 3/8" req'd length
c	22 Bolt machine, 1/2" req'd length
d	97 Washer, 2 1/2" x 3/8", 1/8" hole
d	22 Washer, round, 1 1/2" dia, 3/8" hole
f	26 Pin, crossarm, steel, 3/8" x 10 1/2"
g	9 Crossarm, 3/4" x 4 1/2" x 10 1/2"
g	7 Crossarm, 3/4" x 4 1/2" x 18"
h	2 Crossarm, 3/4" x 4 1/2" x 1 1/2"
h	11 Brace, angle, 1/2" x 1 1/2" x 60" span
k	21 Insulator, suspension
l	12 Clamp, deadend
n	18 Bolt double arming, 3/8" req'd length
o	2 Bolt eye, 3/8" req'd length
p	2 Connectors, as req'd
ao	20 Nut eye, 3/8"
ae	3 Lightning arrester, 3 Kv
ae	2 Lightning arrester, 9 Kv
ar	3 Cutout, fuse, enclosed type
ar	2 Cutout, fuse, single shutoff type
ai	2 Rod, ground
aj	2 Clamp, ground rod
al	2 Staple, ground wire, as req'd
an	2 Transformer
ap	7 Clamp, hot line, lap assembly
aq	3 Leads, as req'd
ca	5 Deadend assembly, primary
cc	5 Deadend assembly, neutral
cd	4 Ground wire, #6 U.S. copper or equiv
dp	1 Adapter, insulator
ga	1 Meter, watt hour
gc	1 Conduit, 1/2", as req'd
gc	1 Nipple, 1/4" req'd length
gd	1 Pipe strap, 1/4" and nails, as req'd
ge	2 Conduit, 1/2", type "E"
ge	1 Conduit, 1/4", type "E"
ge	1 Conduit, 1/4", type "L"
gh	1 Box, meter
sd	2 Transformer, current
se	2 Transformer, potential
pa	2 Connector, solderless
2	Structural timber, 6" x 12" x 10'-0"
	Wire, meter, #14, double braid, rubber covered, as req'd

\* Specify this item to be furnished by the manufacturer.

Notes:  
If transformers longer than 50 KVA are desired, three transformers may be used to prevent line unbalance.  
All tanks to be grounded.  
The assembly shown on drawing G 325-23 (G 2974) is recommended where future loads will require a third transformer.

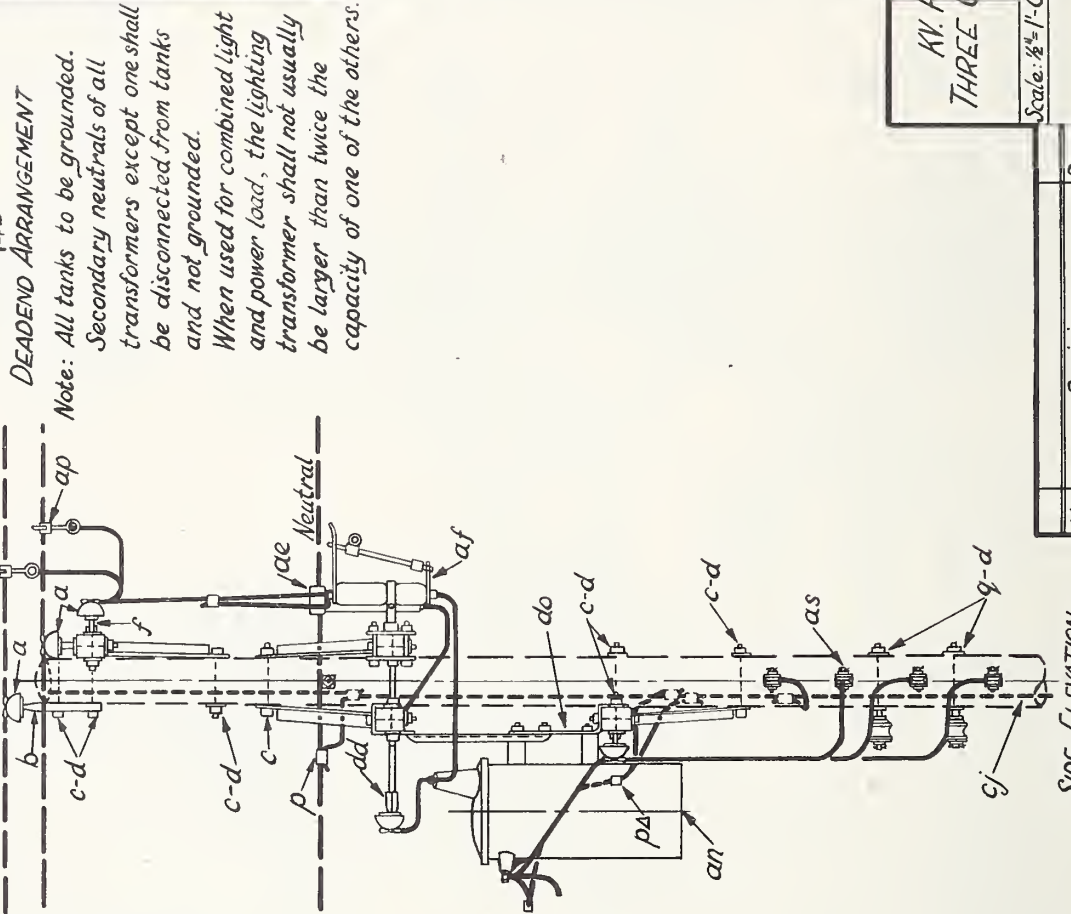
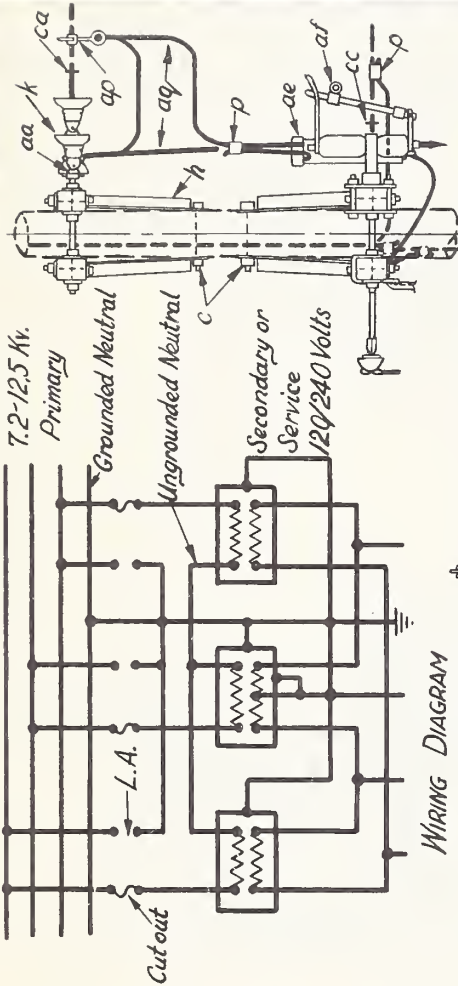
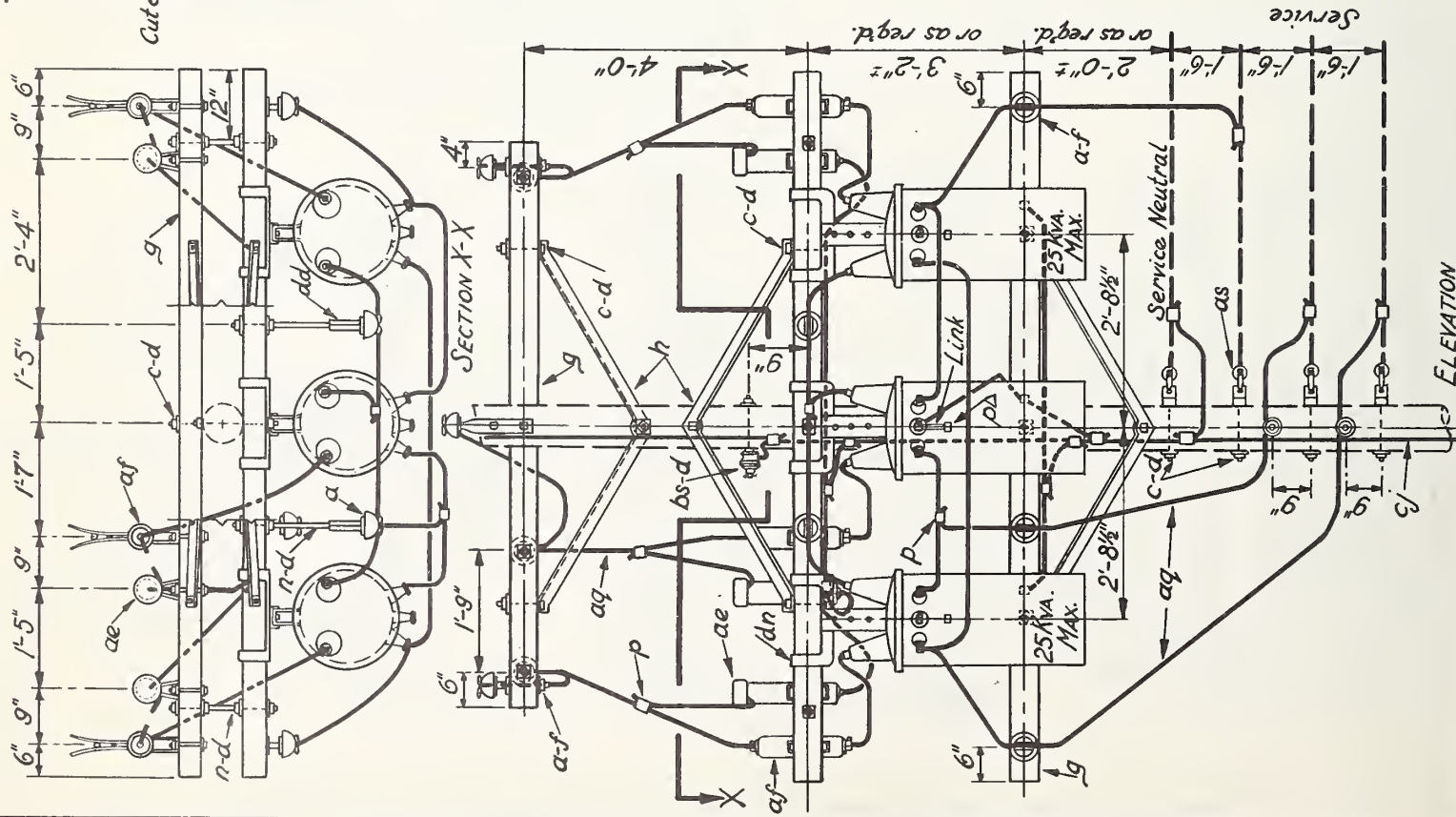
--- Kv. PRIMARY 2-PHASE WIRES AND NEUTRAL  
EQUIPMENT ON PLATFORM WITH METERING-  
(15 Kv. MAXIMUM)

Date: Aug. 19, 1949  
G 325-23

Scale: 3/8" = 1'-0"  
REVISION  
DATE







**DEADEND ARRANGEMENT**

**Note:** All tanks to be grounded. Secondary neutrals of all transformers except one shall be disconnected from tanks and not grounded. When used for combined light and power load, the lighting transformer shall not usually be larger than twice the capacity of one of the others.

No.	ITEM	MATERIAL
a	11	Insulator, pin type
b	1	Pin, pole top, 15"
c	13	Bolt, machine, $\frac{3}{8}$ " x req'd. length
c	8	Bolt, machine, $\frac{1}{2}$ " x req'd. length
d	29	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ " hole
d	8	Washer, round, $1\frac{1}{2}$ " dia, $\frac{3}{8}$ " hole
f	8	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "
g	3	Crossarm, $3\frac{1}{2}$ " x $4\frac{3}{4}$ " x $10\frac{1}{2}$ "
h	4	Brace, angle, $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{3}{16}$ ", 60" span
n	4	Bolt, double arm, $\frac{5}{8}$ " x req'd. L'gth
p		Connectors, as req'd.
q	2	Bolt, double upset, insulated
ae	3	Lightning Arrestor
af	3	Cutout, fuse, single shot
aj	1	Rod, ground
aj	1	Clamp, ground rod
an	3	Transformer
ap	3	Clamp, hot line
aq		Jumpers
as	4	Clevis, service, swinging, insulated
bs	1	Bolt, single upset, insulated
cj		Ground wire assembly
dd	2	Adapter, insulator
dn	3	Hanger, T-crossarm, as req'd.
do	3	Kicker bracket
pd	4	Connector, solderless
	1	Link, neutral grounding

\* Specify these items to be furnished by the manufacturer:

**Note:** If secondary conductors are above transformers refer to drawing G305-5. For metering assemblies refer to drawings M8-1 for outdoor type instrument transformers and M8-2 for indoor type instrument transformers.

KV. PRIMARY, 3-PHASE, 4-WIRE STAR  
THREE CONVENTIONAL TRANSFORMERS  
(POLE MOUNTED)

No.	REVISION	DATE

Scale:  $\frac{1}{4}$ " = 1'-0"

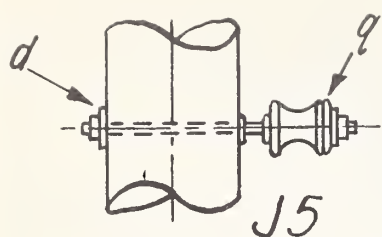
Date: Mar. 3, '49

G315-5

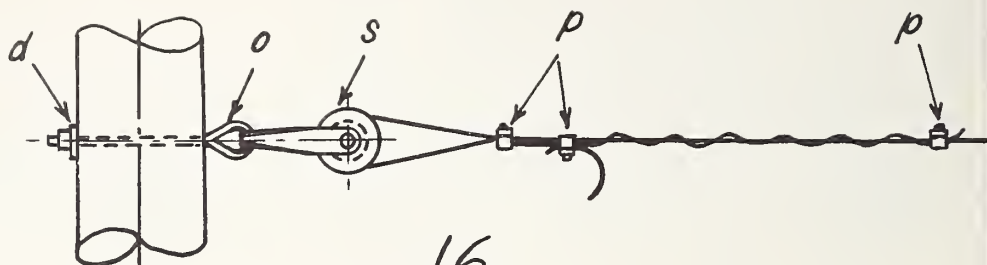






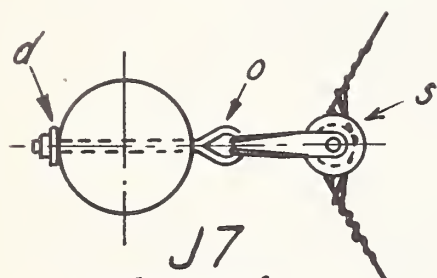


J5



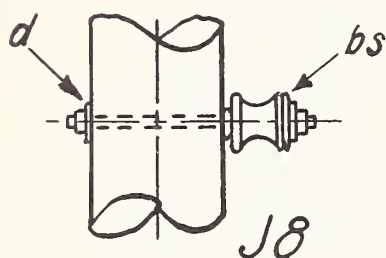
J6

For use on copper

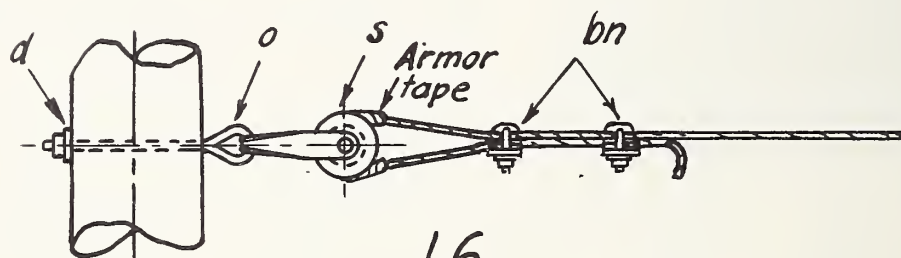


J7

30° to 60°

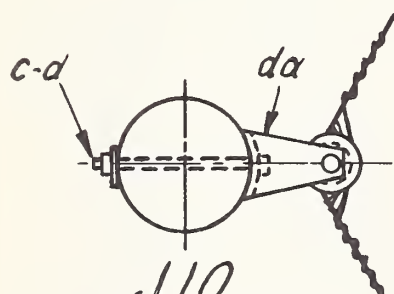


J8



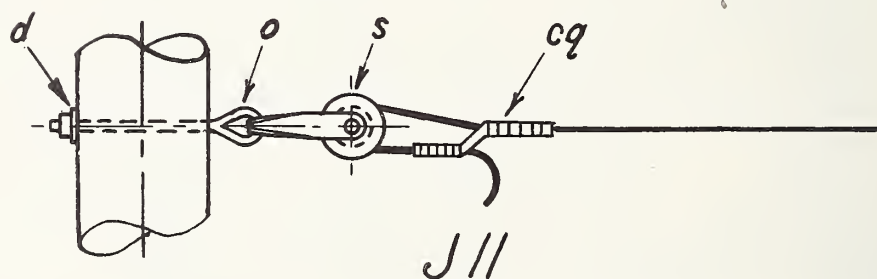
J6

For use on aluminum



J10

5° to 60°



J11

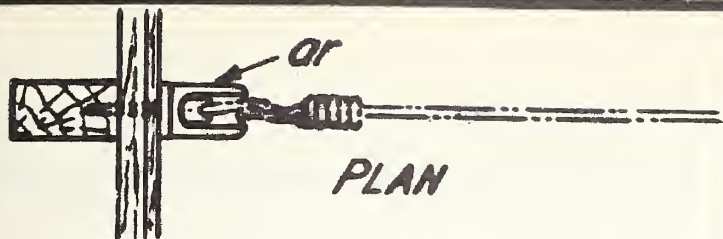
ITEM	NO REQ'D	MATERIAL	ITEM	NO REQ'D	MATERIAL
C		Bolt, machine, 5/8" x req'd length	cq		Sleeve, offset, splicing
d		Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	bn		Clamp, loop deadend
o		Bolt, eye, 5/8" x req'd length	da		Bracket, insulated
p		Connectors, as req'd.			
q		Bolt, double upset, insulated			
s		Clevis, secondary, swinging, insulated			
bs		Bolt, single upset, insulated			

## SECONDARY ASSEMBLIES

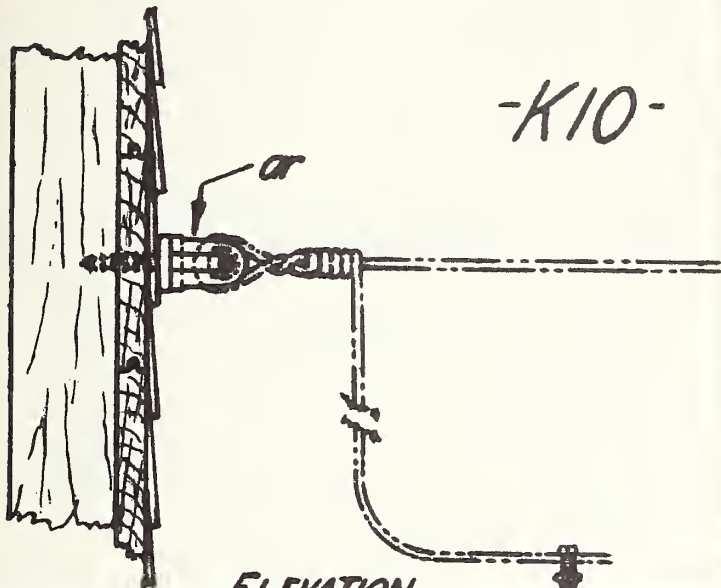
Scale: N.T.S.

Date: June 26, 1948

No.	REVISION	DATE	J5 to J11
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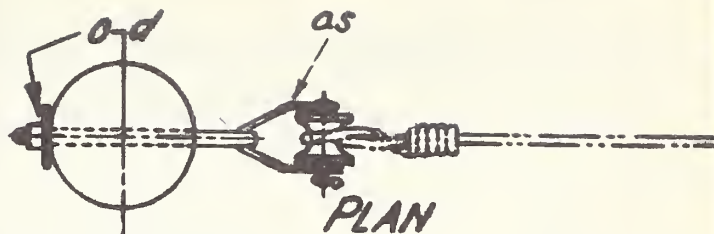


PLAN

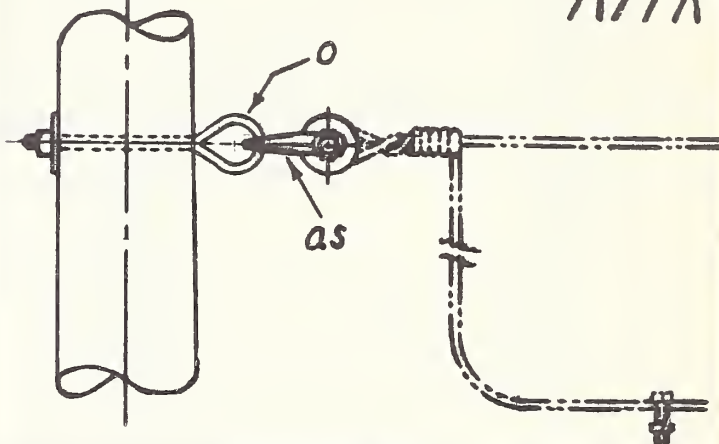


ELEVATION

-K10-

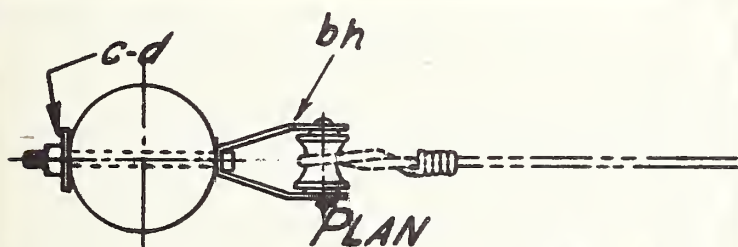


PLAN



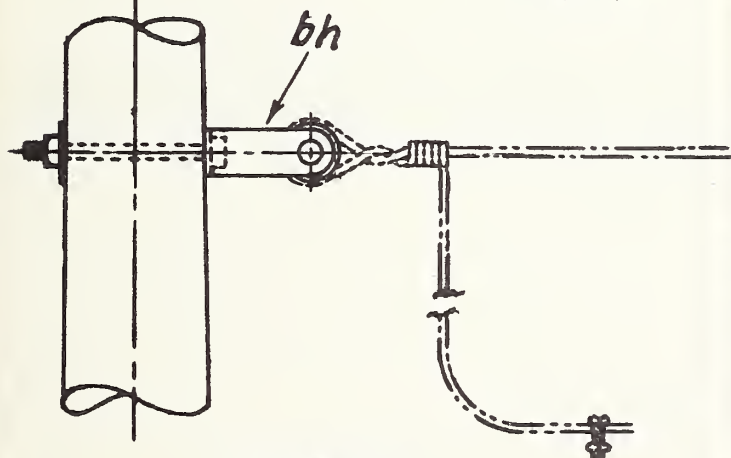
ELEVATION

-K11R-



PLAN

-K14-

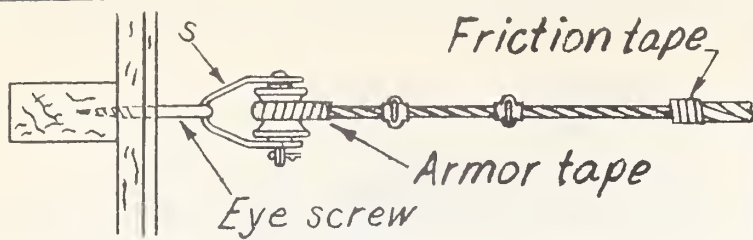


ELEVATION

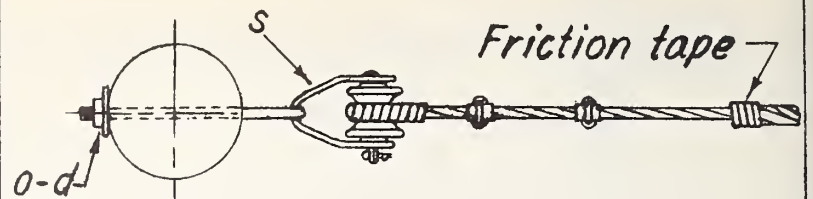
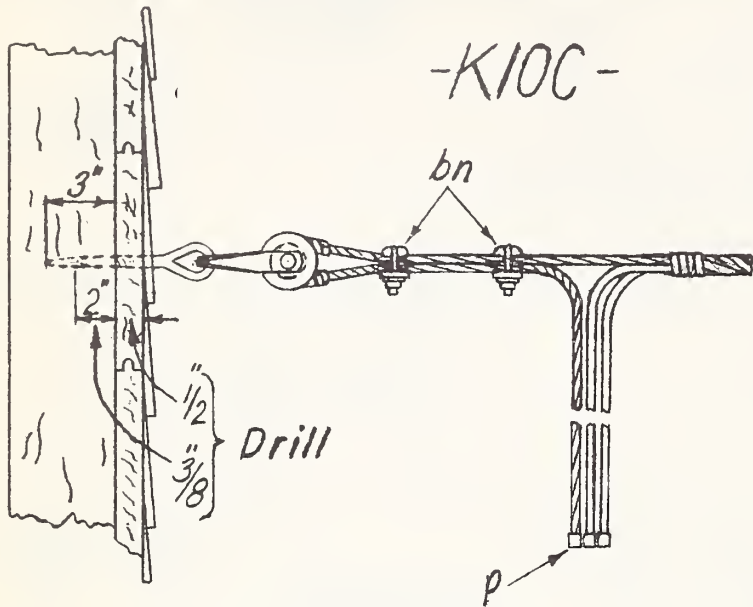
ITEM	MATERIAL	ITEM	MATERIAL
c	Bolt, machine, $\frac{5}{8}$ " x req'd length	bh	Clevis, service, deadend, insulated
d	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{1}{16}$ ", $\frac{1}{16}$ " hole	o	Bolt, eye, $\frac{5}{8}$ " x req'd. length
ar	Wireholder		
as	Clevis, service, swinging, insulated		

### SERVICE ASSEMBLIES

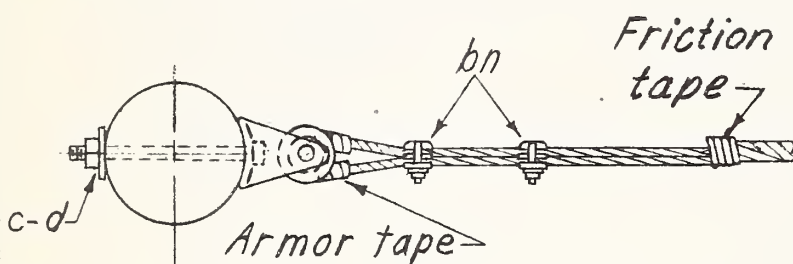
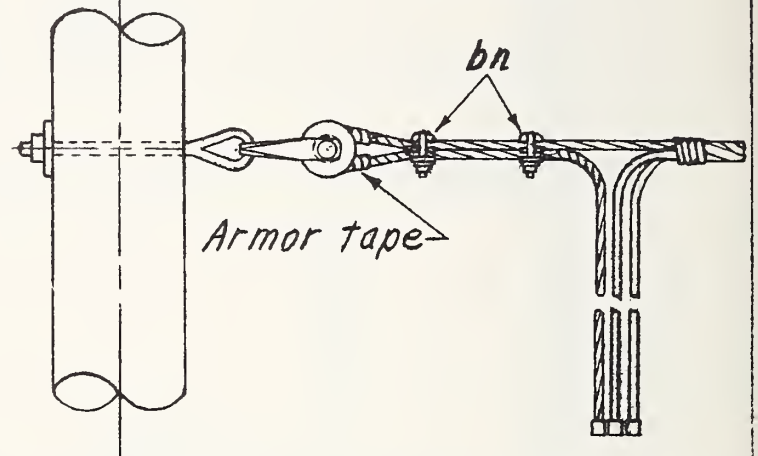
1	Changed clevis assembly	9-9-32	Scale: $1\frac{1}{2}$ "=1'-0"	Date:
NO.	REVISION	DATE:		K10, K11R, K14



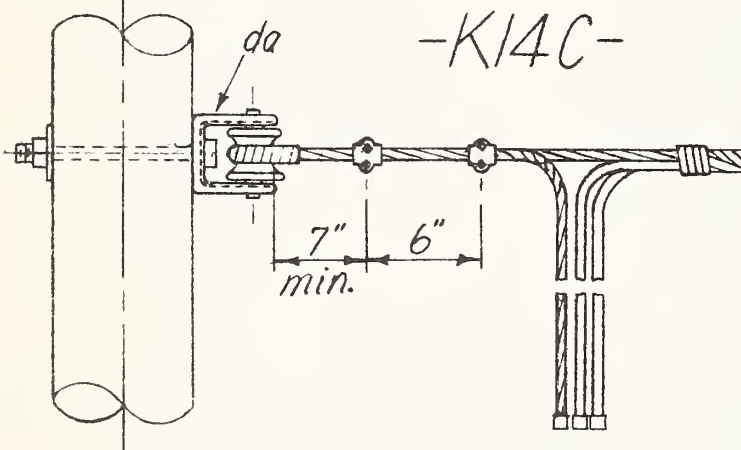
-K10C-



-K11C-



-K14C-



#### NOTES:

This type construction should be used for 3-conductor service cables with bare A.C.S.R. neutral.

Eye screw to be wrenched in.

For brick or concrete walls use  $\frac{3}{4}$ " x  $3\frac{1}{2}$ " expansion shield in  $\frac{3}{4}$ " x 4" hole.

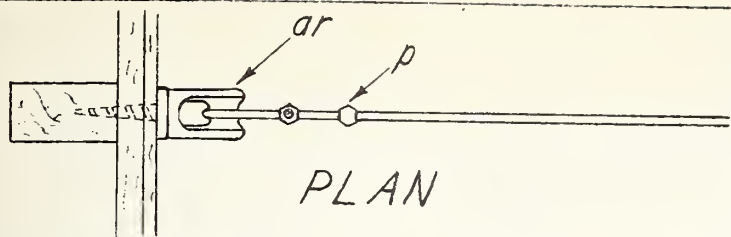
ITEM	MATERIAL	ITEM	MATERIAL
c	Bolt, machine, $\frac{5}{8}$ " x req'd length	bn	Clamp, loop deadend
d	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole	da	Bracket, insulated
o	Bolt, eye, $\frac{5}{8}$ " x req'd length	d4	Screw, eye, elliptical, $\frac{1}{2}$ " x 6"
s	Clevis, secondary, swinging, insulated	p	Connectors, as required

#### SERVICE ASSEMBLIES, CABLE

Scale:  $1\frac{1}{2}$ " = 1'-0"

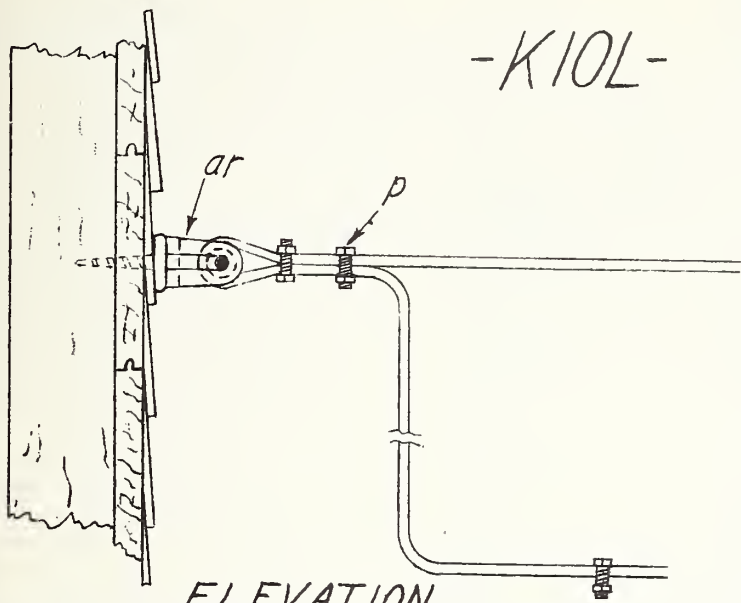
Date: Jan. 21, 1952

NO.	REVISION	DATE	K10C, K11C, K14C
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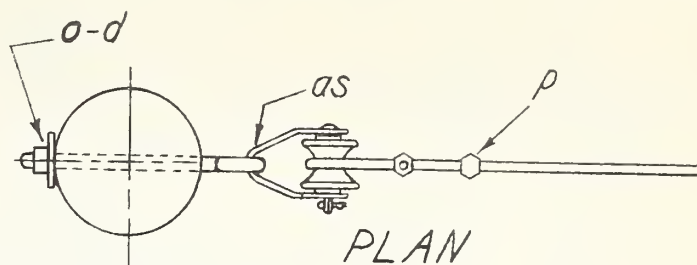


PLAN

-K10L-

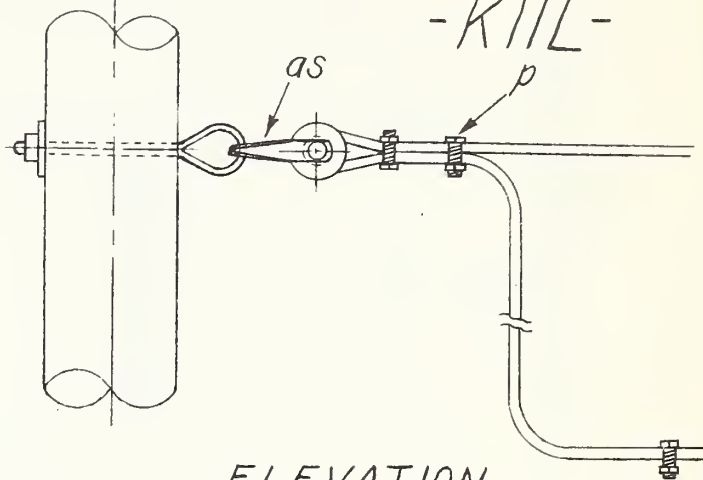


ELEVATION

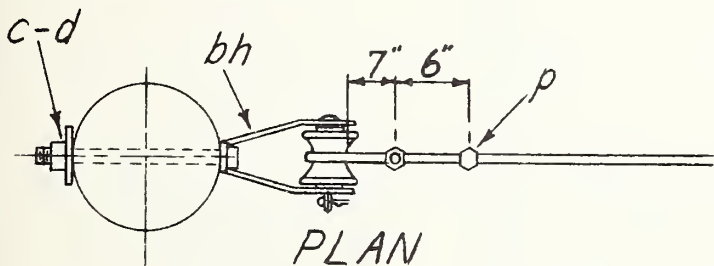


PLAN

-K11L-

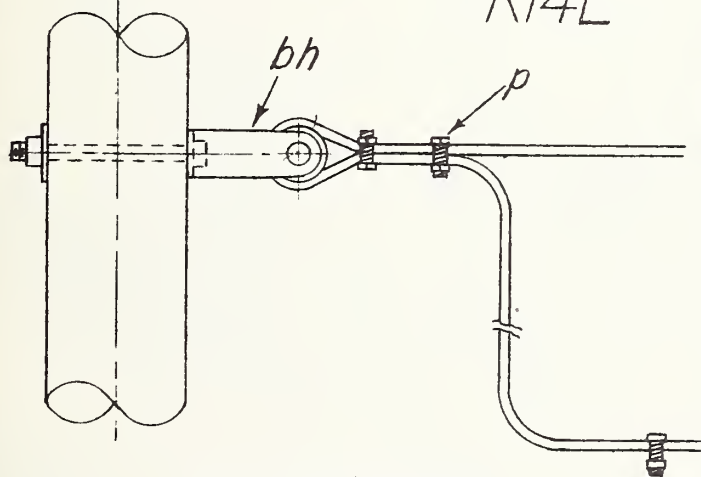


ELEVATION



PLAN

-K14L-



ELEVATION

NOTE 1:

This type construction should be used for No. 2 aluminum weather-proof conductor and larger.

NOTE 2:

Connectors to be applied over bare wire and then taped as required.

ITEM	MATERIAL
c	Bolt, machine, $\frac{5}{8}$ " x req'd length
d	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{1}{16}$ " hole
ar	Wireholder
as	Clevis, service, swinging, insulated

ITEM	MATERIAL
bh	Clevis, service, deadend, insulated
p	Connectors, as required
o	Bolt, eye, $\frac{5}{8}$ " x reqd. length

SERVICE ASSEMBLIES

Scale:  $\frac{1}{2}$ " = 1'-0"

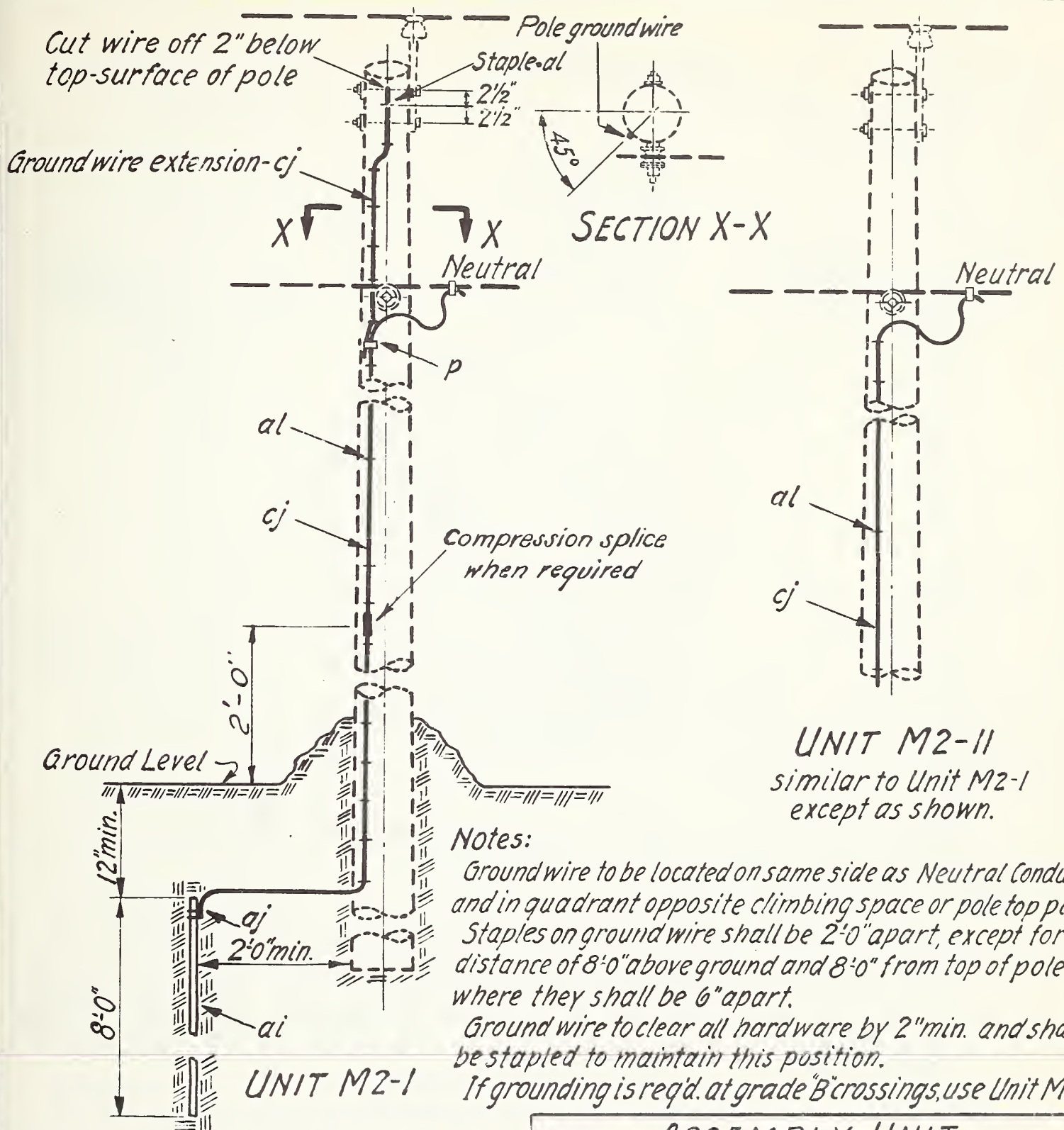
(LARGE CONDUCTORS)

Date: Jan. 16, 1952

K10L, K11L, K14L

NO.	REVISION	DATE
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### ASSEMBLY UNIT

ITEM	MATERIAL	M2-I	M2-II	
p	Connector	2	1	
ai	Rod, ground, 5/8" dia. min.	1	1	
aj	Clamp, ground rod	1	1	
al	Staples, ground wire, 3/16" x 1/2" #9, as req'd.			
cj	Ground wire, #6 S.D. Copper or equiv.	1	1	
cj	Ground wire extension, #6 S.D. Copper "	1		

### GROUNDING ASSEMBLY-GROUND ROD TYPE

Scale: 1/2"=1'-0"

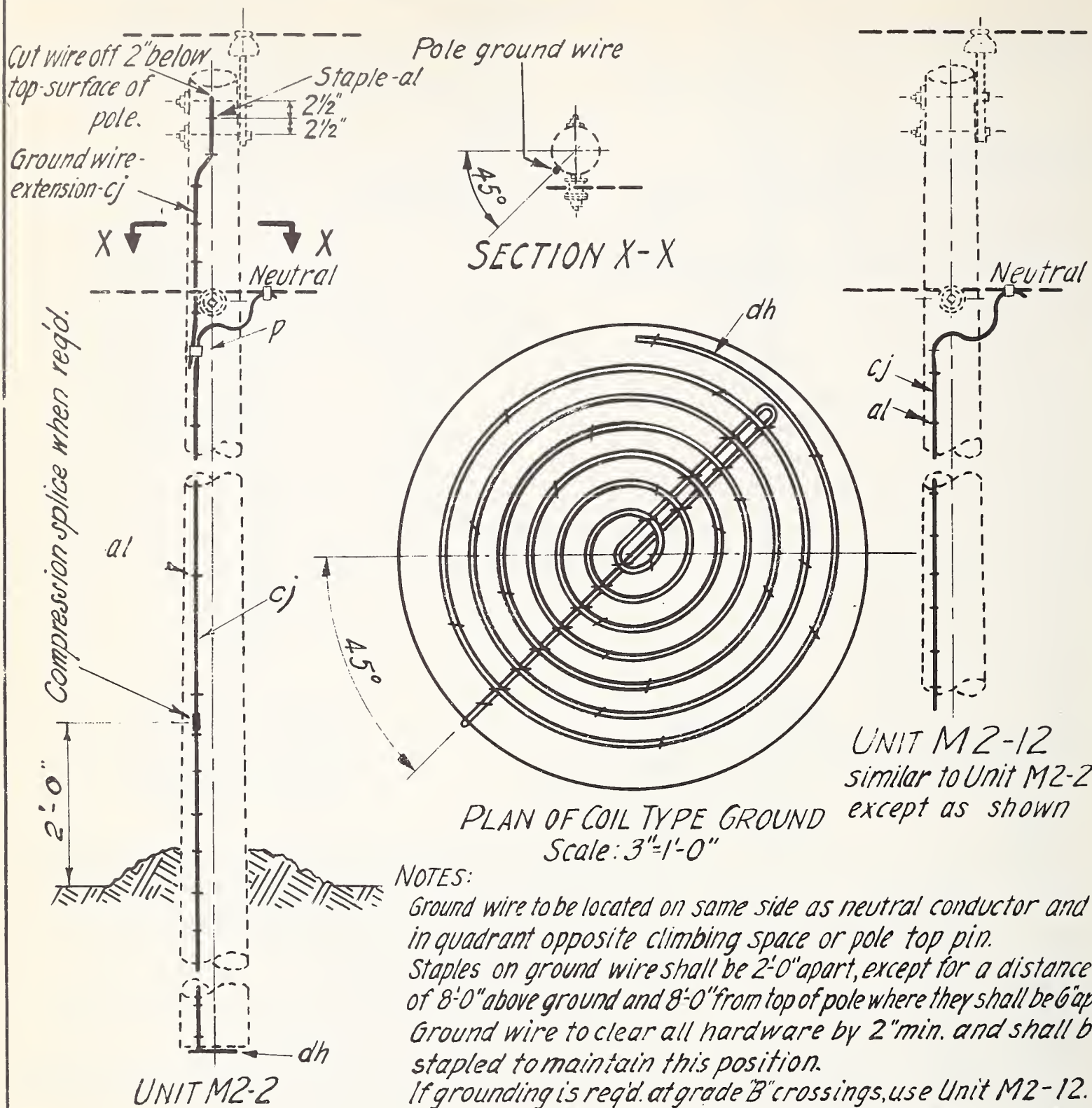
Date:

M2-I, M2-II.

No.

REVISION

DATE:



ASSEMBLY UNIT				
ITEM	MATERIAL	M2-2	M2-12	
p	Connectors	2	1	
al	Staples, ground wire, 3/16" x 1 1/2" x #9, as req'd.			
cj	Ground wire, #6 S.D. Copper or equiv't.	1	1	
dh	Butt type grounding device, coil or plate	1	1	
cj	Ground wire extension, #6 S.D. Copper	1		

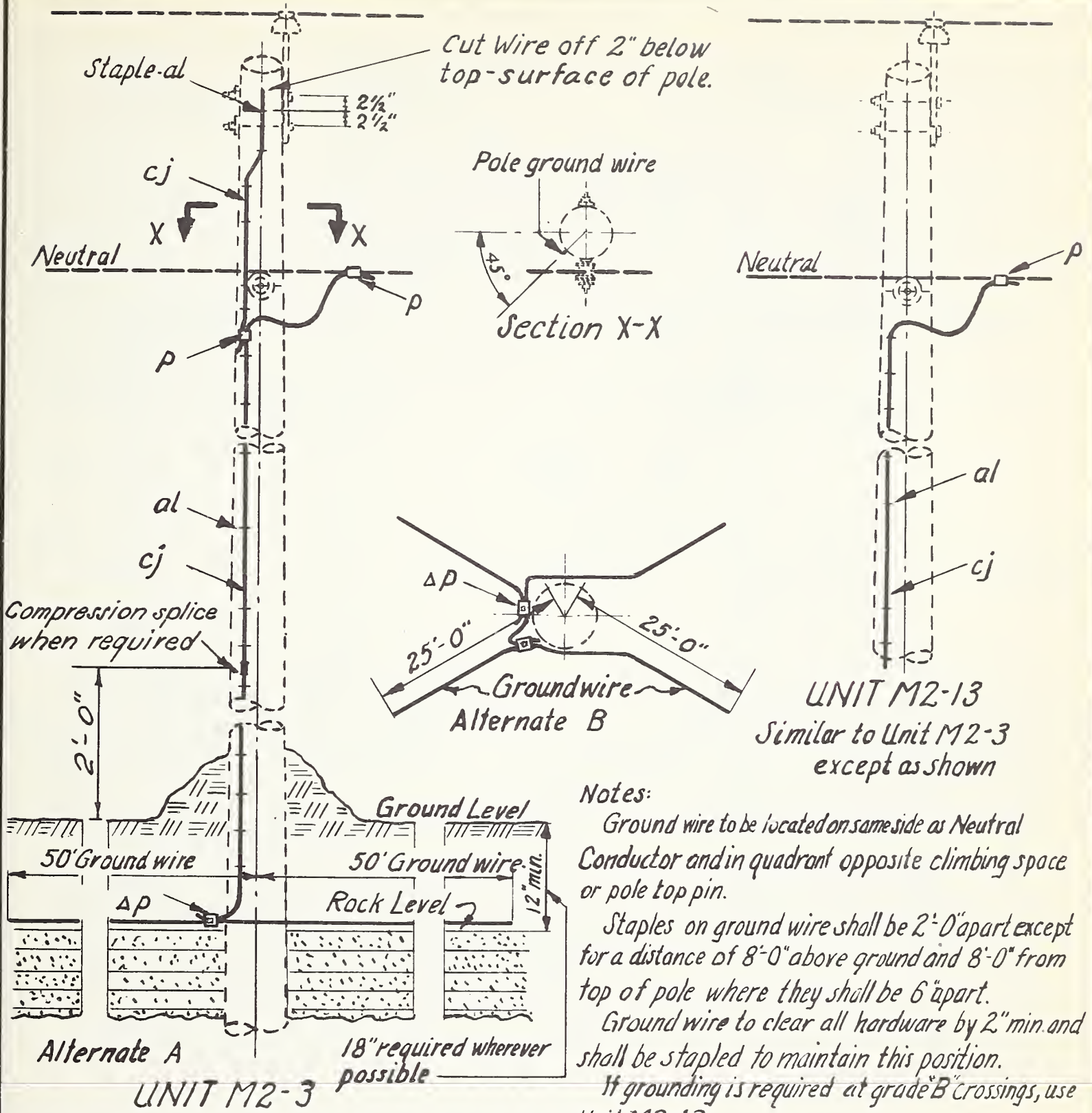
## POLE PROTECTION ASSEMBLY-BUTT TYPE (COIL, PLATE OR ROD)

Scale: 1/2"=1'-0"

Date:

1	Changed title	11/2/48
NO.	REVISION	DATE:

M2-2, M2-12



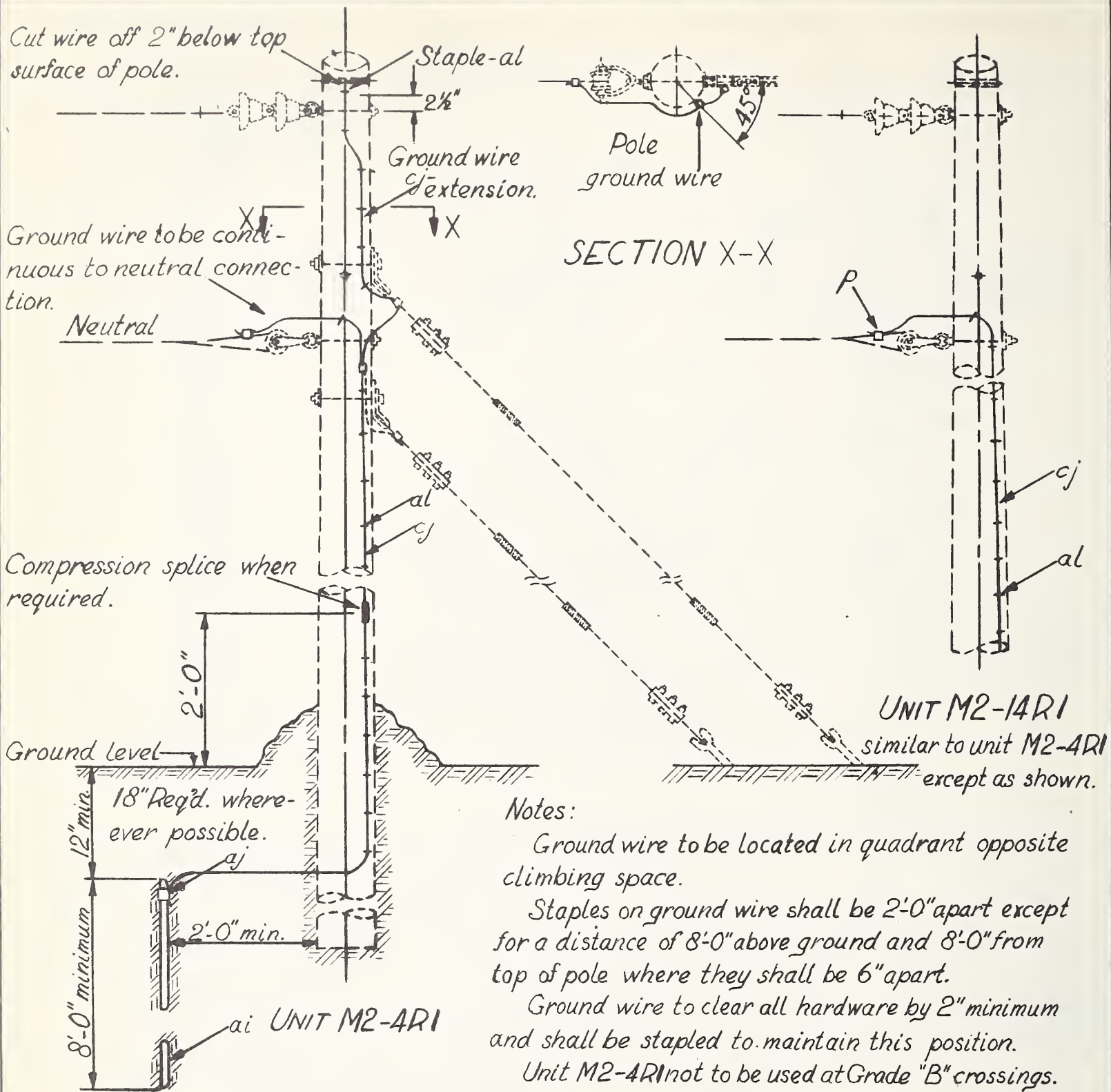
*Note: Butt type grounding device, coil or plate, may be used in addition.*

ITEM	MATERIAL	ASSEMBLY UNIT	
		M2-3	M2-13
<i>p</i>	Connector	2	1
<i>al</i>	Staples, groundwire, $\frac{3}{16} \times 1\frac{1}{2} \times \frac{9}{16}$ as req'd.		
<i>cj</i>	Groundwire, #6 S.D. Copper or equiv. int.	1	1
<i>cj</i>	Groundwire extension, #6 S.D. Copper "	1	
$\Delta p$	Clamp, groundwire, parallel groove	2	2

**GROUNDING ASSEMBLY - TRENCH TYPE**

Scale  $\frac{1}{2}" = 1'-0"$

Date:



		ASSEMBLY UNIT		
ITEM	MATERIAL	M2-4R1	M2-14R1	
P	Connector, as required			
al	Rod, ground, 5/8" diam. min.	/	/	
aj	Clamp, ground rod	/	/	
al	Staples, ground wire, 3/16" x 1 1/2"			
CJ	Ground wire, #6 S.D. copper or equiv.	/	/	
CJ	Ground wire extension, #6 S.D. copper, "			

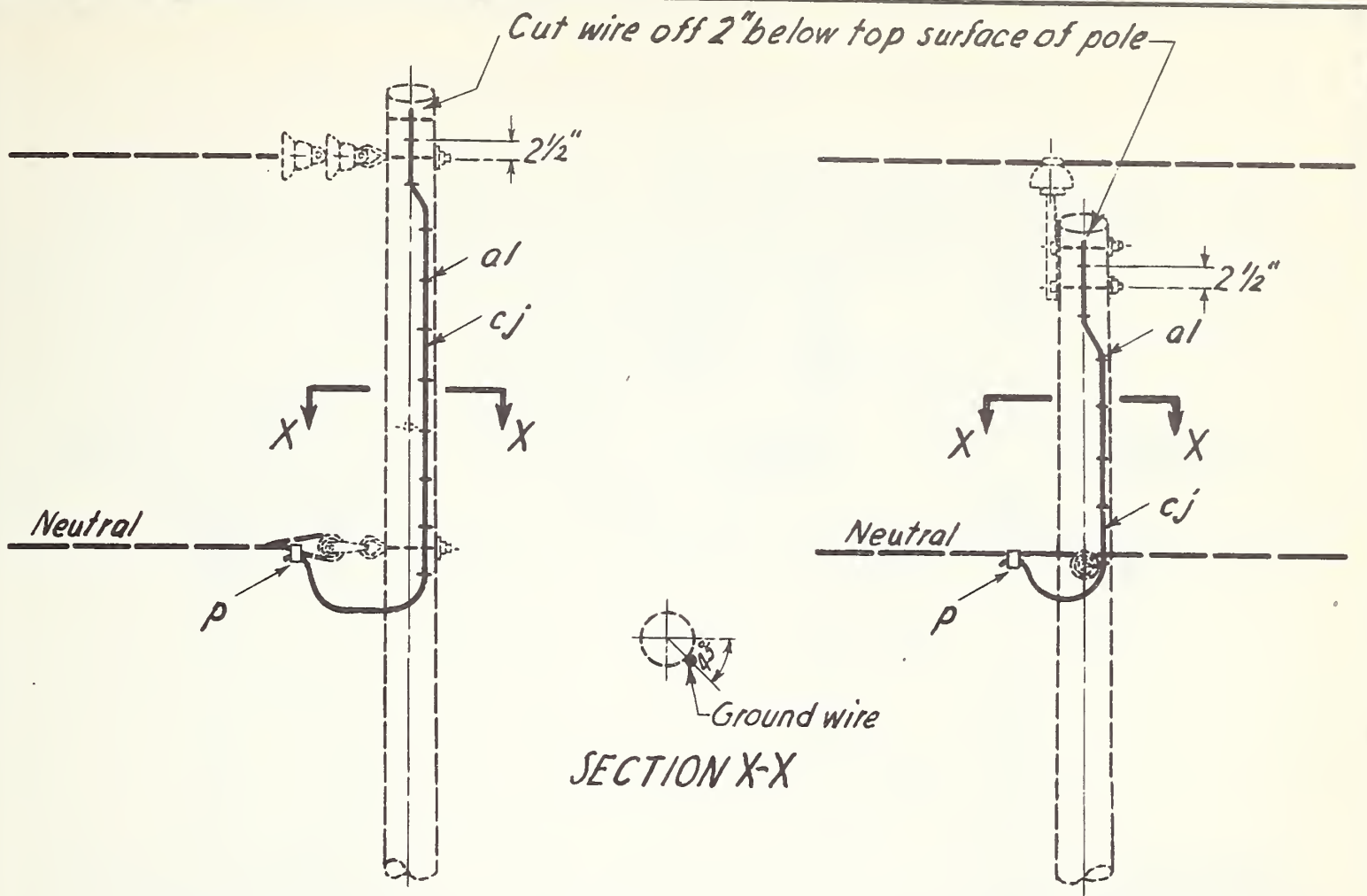
# GROUNDING ASSEMBLY - DEADEND

Scale: 1/2"=1'-0"

Date: May 25, 49

M2-4R1, M2-14R1

No. REVISION DATE



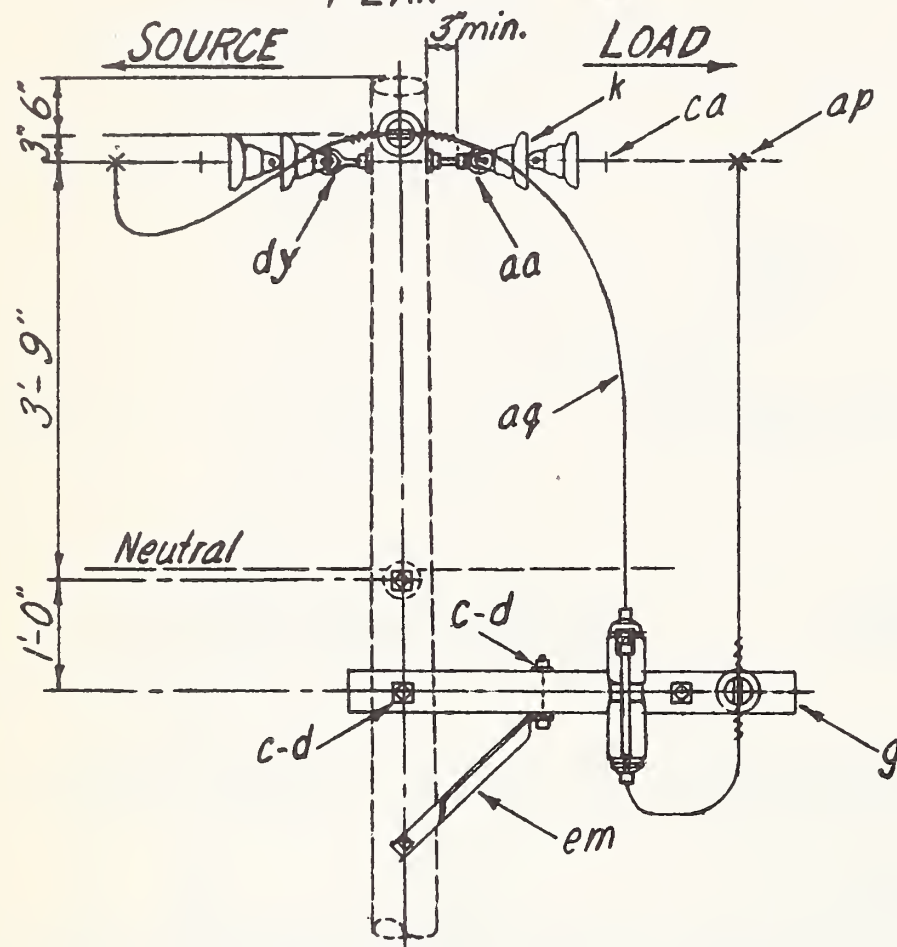
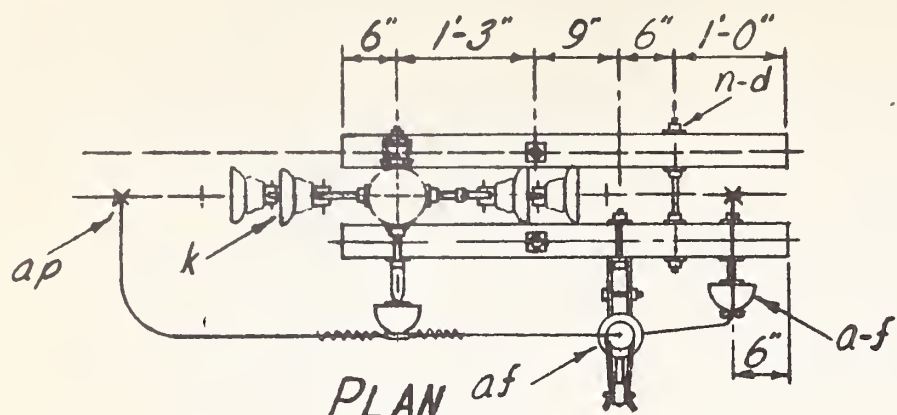
**NOTES:**

1. Ground wire to be located on same side as Neutral Conductor and in quadrant opposite climbing space.
2. Staples on ground wire to be 6" apart.
3. Ground wire to clear all hardware by 2" min. and shall be stapled to maintain this position.
4. This Assembly not to be used at Grade "B" Crossings.

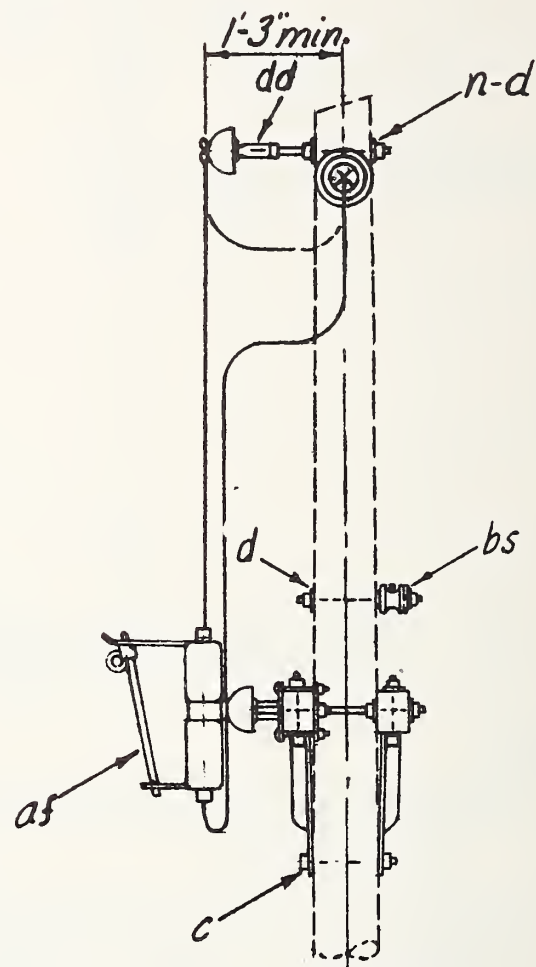
ITEM	NO. REQD.	MATERIAL	ITEM	NO. REQD.	MATERIAL
p	1	Connector			
a1		Staples ground wire, 3/16" x 1 1/2"			
cj		Ground Wire, #6 S.D. copper or equiv.			

		POLE TOP PROTECTION ASSEMBLY	
		Scale: 1/2" = 1'-0"	Date: May 11, 1948
No.	REVISION	DATE	M2-9R



ELEVATION



SIDE ELEVATION

ITEM	NO. REQD.	MATERIAL	ITEM	NO. REQD.	MATERIAL
a	2	Insulator, pin type	ap	2	Clamp, hot line, tap assembly
c	4	Bolt, machine, $\frac{7}{8}$ " x regd. length	aq		Leads, or jumpers, as required
d	13	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole	bs	1	Bolt, single upset, insulated
f	1	Pin, crossarm, steel, $\frac{7}{8}$ " x $10\frac{3}{4}$ "	ca	2	Deadend assembly, primary
g	2	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x $4'-0"$	dd	1	Adapter, insulator
k	4	Insulator, suspension	dy	1	Bolt, eye, double arming, $\frac{7}{8}$ " x regd. lgh.
n	2	Bolt, double arming, $\frac{7}{8}$ " x regd. length	em	2	Brace, angle, special, $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{3}{16}$ "
aa	1	Nut, eye, $\frac{7}{8}$ "			
af	1	Cutout, fuse, single shot			

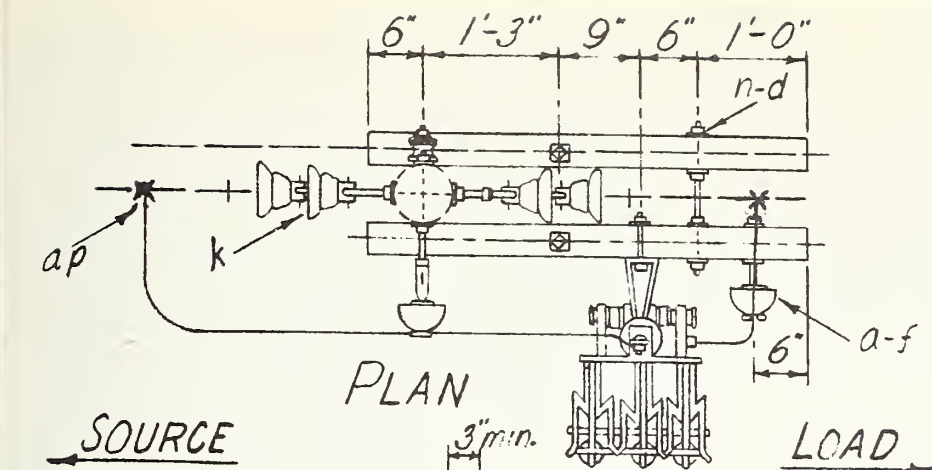
7.2/12.5KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUND  
ONE SECTIONALIZING FUSE CUTOUT, SINGLE SHOT

Scale:  $\frac{1}{2}$ " = 1'-0"

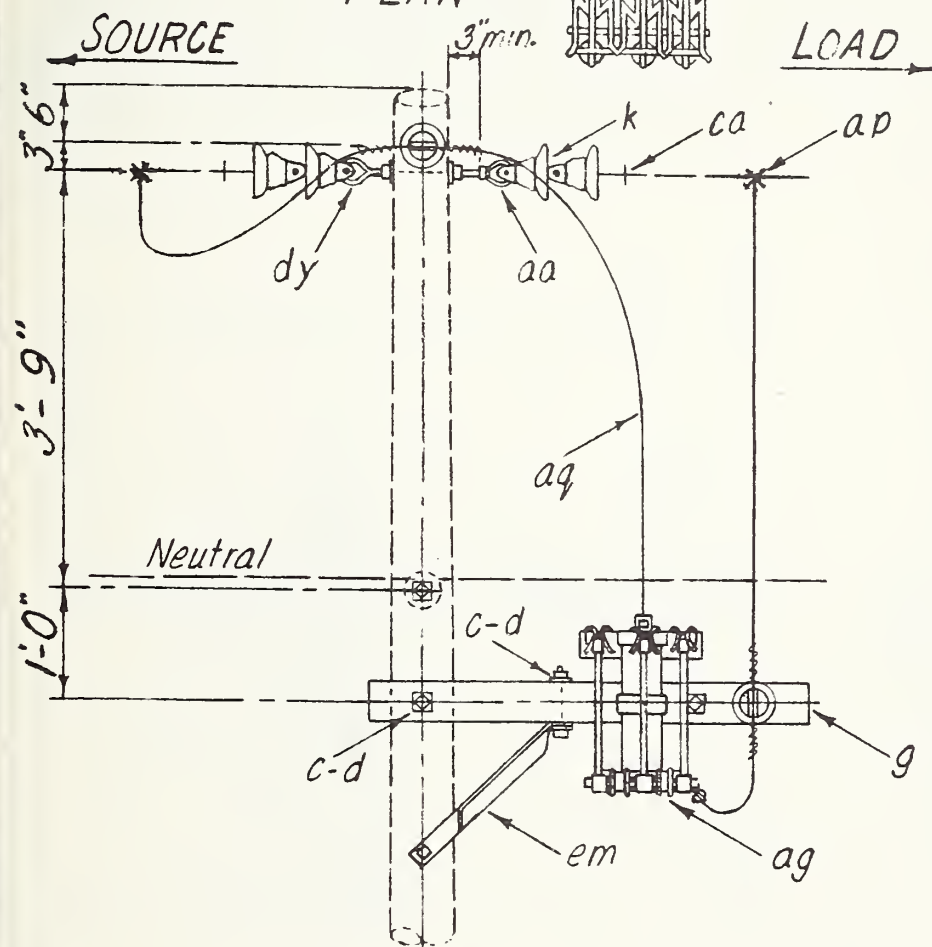
Date: Feb. 8, 1951

No. REVISION DATE:

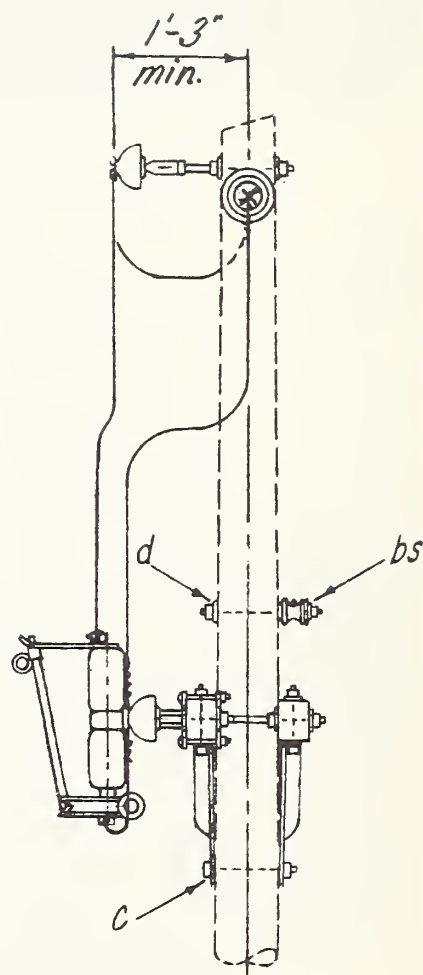
M3-1R1



PLAN



ELEVATION



SIDE ELEVATION

ITEM	NO. REQD	MATERIAL	ITEM	NO. REQD	MATERIAL
a	2	Insulator, pin type	ap	2	Clamp, hot line, tap assembly
c	4	Bolt, machine, $\frac{5}{8}$ " x regd. length	aq		Leads, or jumpers, as required
d	13	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole	bs	1	Bolt, single upset, insulated
f	1	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "	ca	2	Deadend assembly, primary
g	2	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 4'-0"	dd	1	Adapter, insulator
k	4	Insulator, suspension	dy	1	Bolt, eye, double arming, $\frac{5}{8}$ " x regd. lenth.
n	2	Bolt, double arming, $\frac{5}{8}$ " x regd. lenth.	em	2	Brace, angle, special, $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{3}{16}$ "
aa	1	Nut, eye, $\frac{5}{8}$ "			
aq	1	Cutout, fuse, three shot			

72/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUND  
ONE SECTIONALIZING FUSE CUTOUT, 3-SHOT

Scale:  $\frac{1}{2}$ "=1'-0"

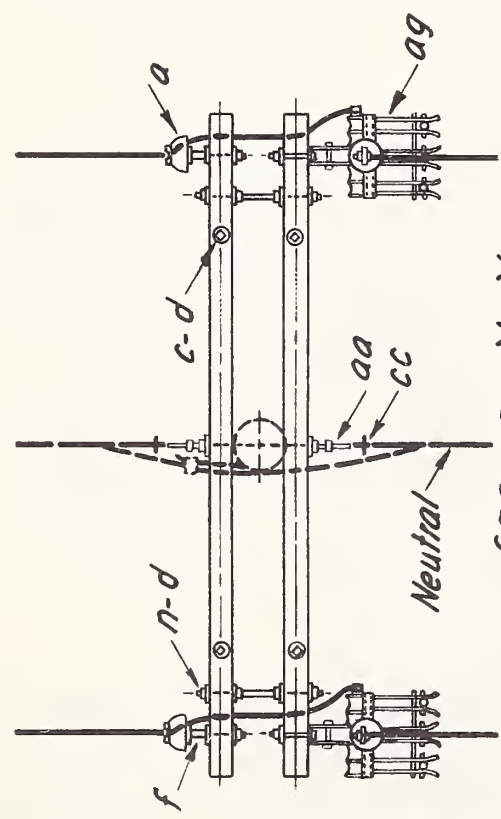
Date: Feb. 9, 1951

NO. REVISION DATE:

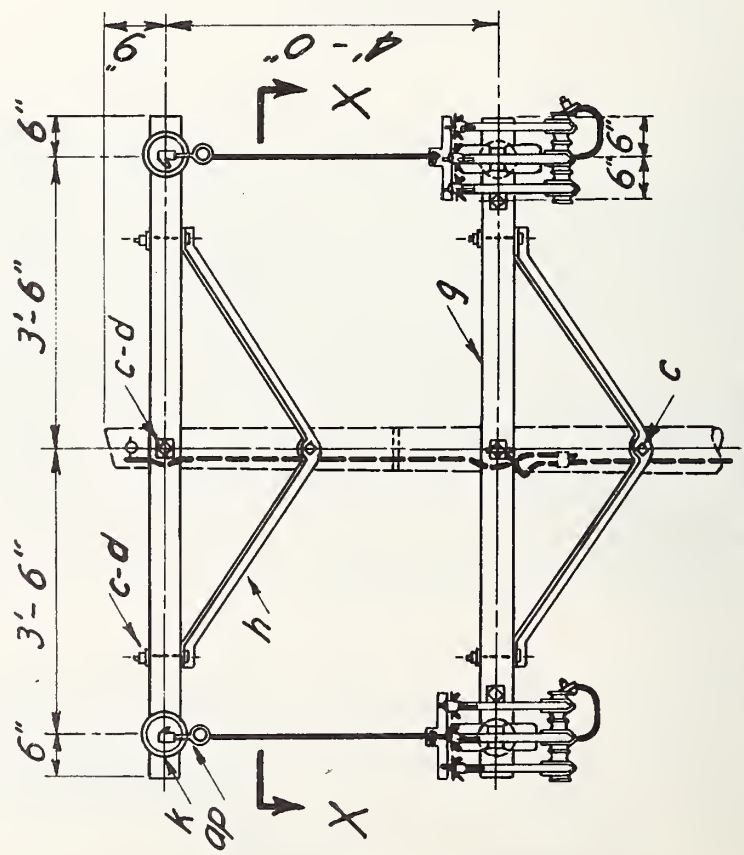
M3-2 R1

NOTE:

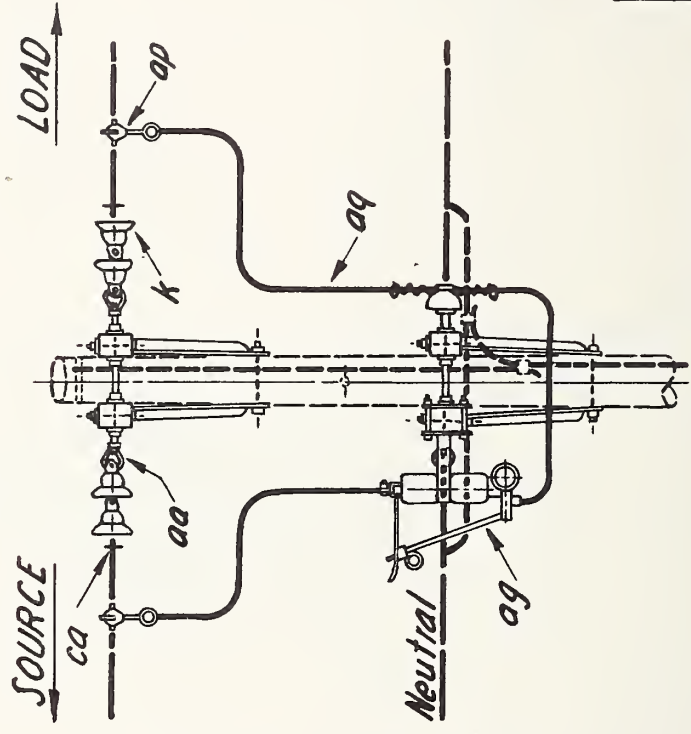
This arrangement should also be used for oil circuit reclosers having top and bottom terminals and for single shot fuse cutouts or other similar sectionalizing devices.



SECTION X-X



ELEVATION



SIDE ELEVATION

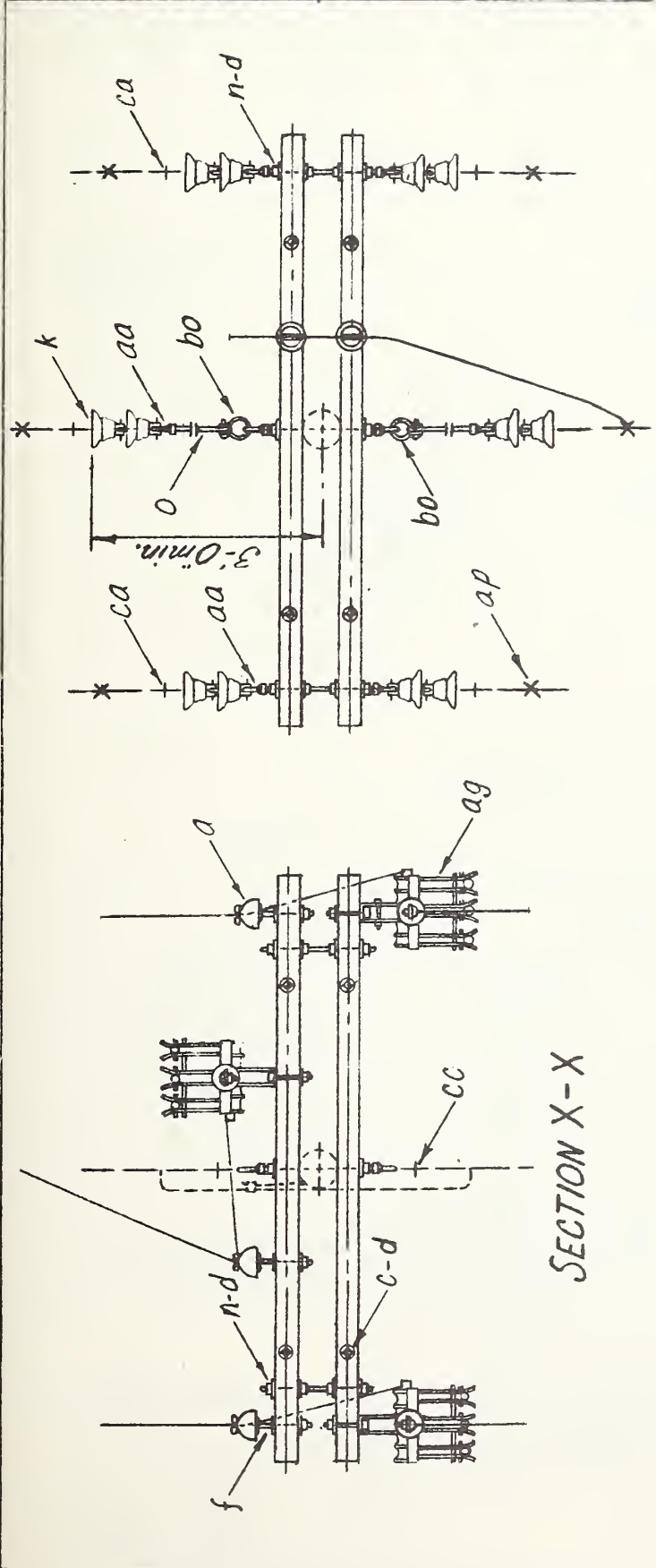
ITEM	NO.	MATERIAL
a	2	Insulator, pin type
c	8	Bolt, machine, 1/2" x req'd. length
c	3	Bolt, machine, 3/8" x req'd. length
d	8	Washer, 1 3/8" diam, 9/16" hole
d	20	Washer, 2 1/4" x 2 1/4" x 3/16" 9/16" hole
f	2	Pin, crossarm, steel, 3/8" x 10 3/4"
g	4	Crossarm, 3 1/2" x 4 1/2" x 8'-0" / g.
h	4	Brace, 1 1/2" x 1 1/2" x 3/16", 60" span
k	8	Insulator, suspension
n	5	Bolt, double arming, 3/8" x req'd. lg.
p		Connectors, as req'd.
aa	6	Nut, eye, 5/8"
ag	2	Cutout, fuse, three-shot
ai	1	Rod, ground, 3/8" diam. min.
aj	1	Clamp, ground rod
al		Staples, ground wire, as req'd.
ap	4	Clamp, hot line, tap assembly
aq		Leads, as req'd.
ca	4	Deadend assembly, primary
cc	2	Deadend assembly, neutral
cl		Ground wire #6 S.D. copper or equiv.

1KV PRIMARY, 2-PHASE WIRES AND NEUTRAL  
TWO SECTIONALIZING FUSE CUTOUTS, THREE SHOT

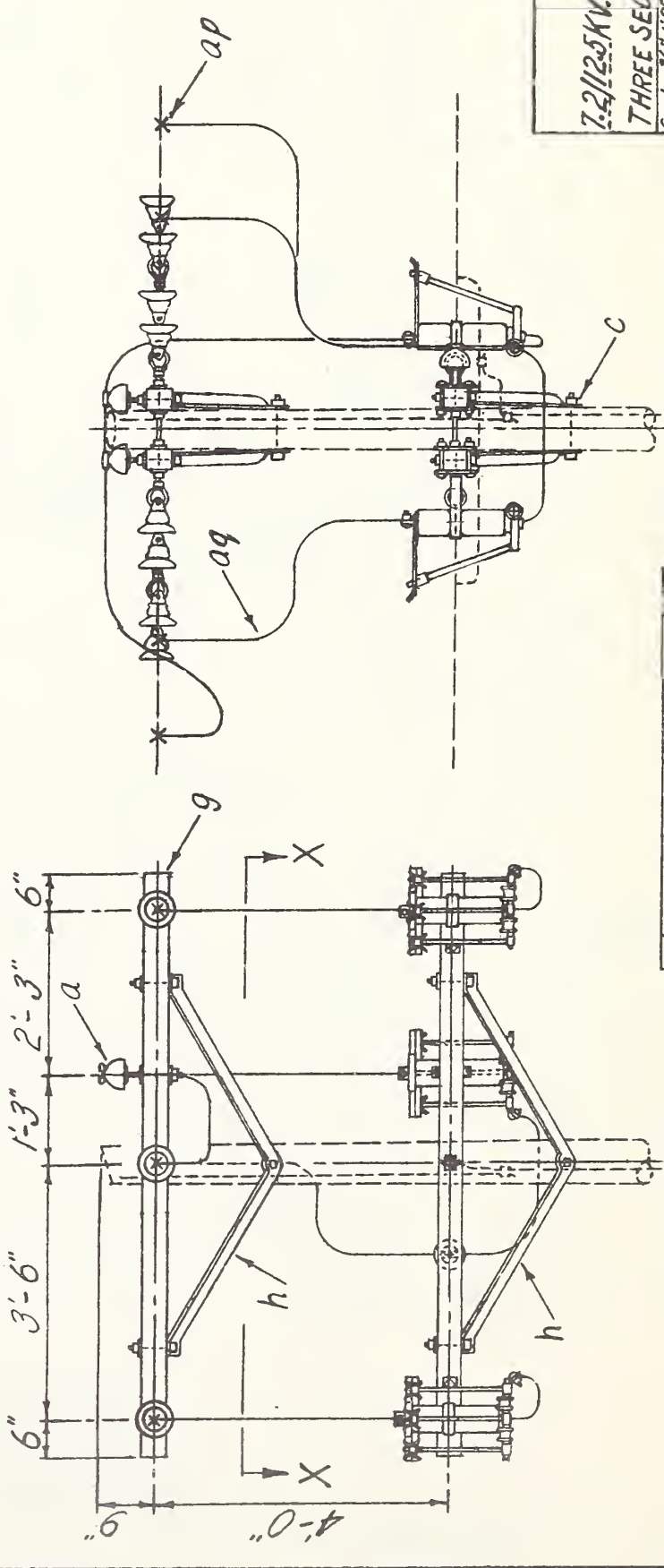
Scale: 3/8"=1'-0"  
Date: June 7, 1940  
M 3-3

NO.	REVISION	Date:
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ITEM NO.	MATERIAL
a	5 Insulator, pin type
c	8 Bolt, machine, 1/2" x regd. length
c	2 Bolt, machine, 3/8" x regd. length
d	8 Washer, r.d., 1 1/8" dia., 9/16" hole
d	20 Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole
f	5 Pin, crossarm, steel, 3/8" x 10 3/4"
g	4 Crossarm, 3 1/2" x 4 1/2" x 8" = 0"
h	4 Brace, 1 1/2" x 1 1/2" x 3/16", 60" span
k	12 Insulator, suspension
n	6 Bolt, double arming, 3/8" x regd. lgh.
p	Connectors, as required
aa	10 Nut, eye, 3/8"
ag	3 Cutout, fuse, three-shot
ap	6 Clamp, hot line, top assembly
ag	Leads and jumpers as reqd.
bo	2 Shackles, anchor
ca	6 Deadend assembly, primary
cc	2 Deadend assembly, neutral
o	2 Bolt, eye, 3/8" x regd. length



PLAN

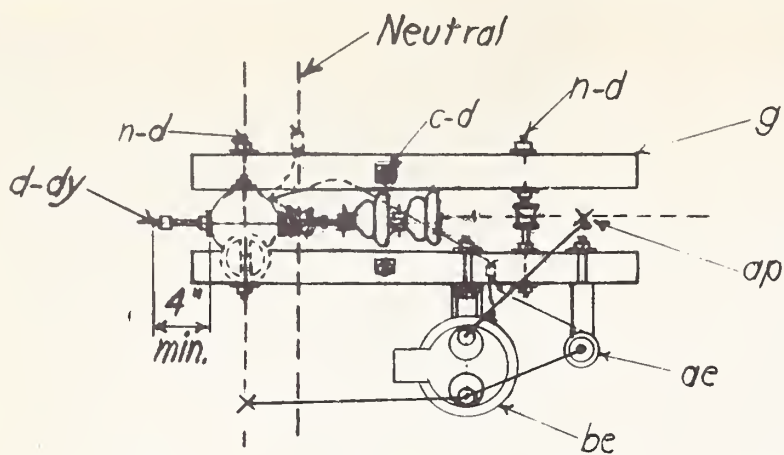


ELEVATION

SIDE ELEVATION

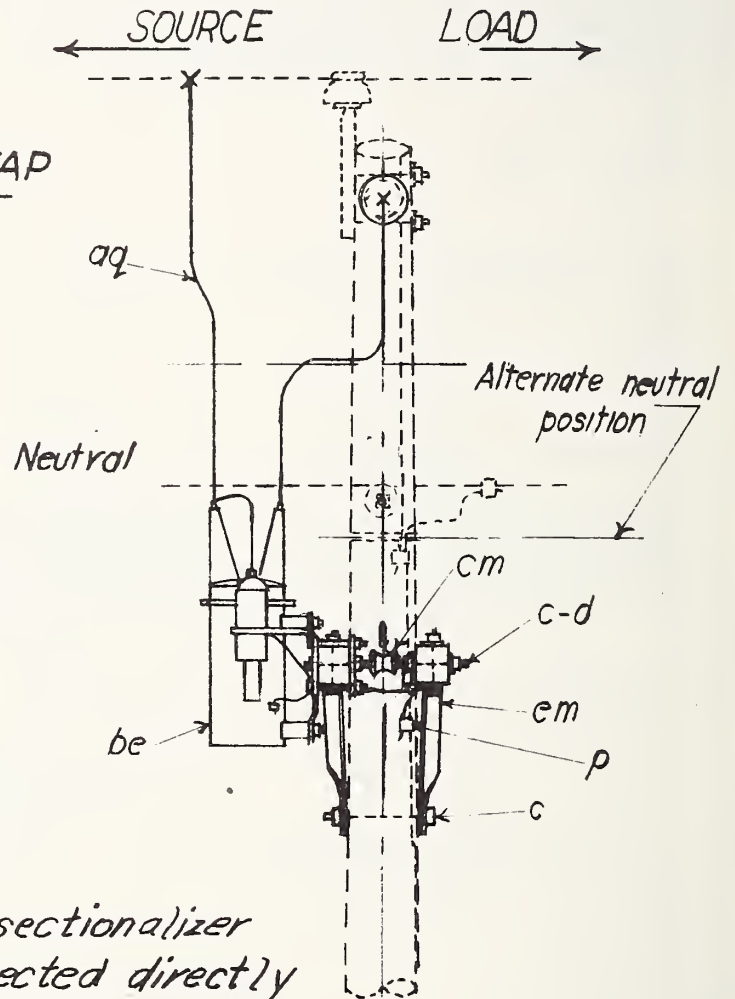
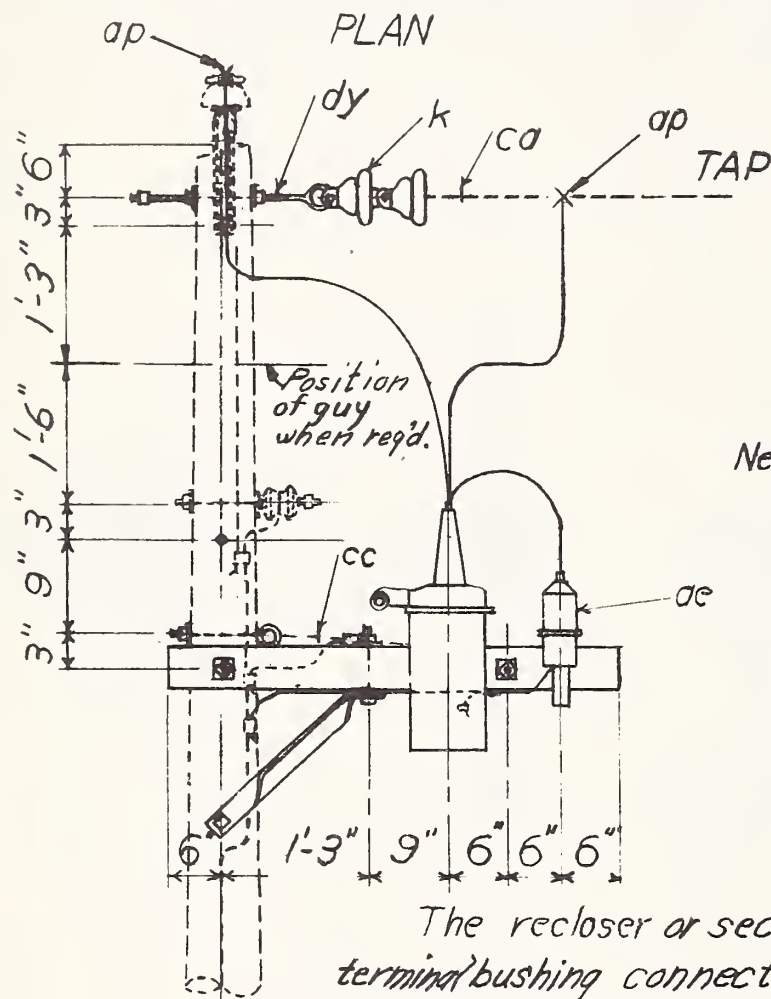
NO.	REVISION	DATE
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7.2/12.5KV. PRIMARY, 3-PHASE 4-WIRE STAR  
THREE SECTIONALIZING FUSE CUTOUTS, THREE SHOT  
Date: Feb. 16, 1937  
M 3-4 R 1



Note:

This arrangement is recommended only for use where not practical to install reclosers or sectionalizers on a tap pole.



The recloser or sectionalizer terminal bushing connected directly to the coil should be connected to the source.

ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
c	3	Bolt, machine, $\frac{5}{8}$ " req'd. length	ap	2	Clamp, hot line tap assembly
d	10	Washer, $2\frac{1}{4} \times 2\frac{1}{4} \times \frac{3}{16}$ , $\frac{13}{16}$ " hole	aq		Jumpers and leads as req'd.
g	2	Crossarm, $3\frac{1}{2} \times 4\frac{1}{2} \times 4'-0"$	be	1	Recloser, oil circuit (M3-10T only)
k	2	Insulator, suspension	el	1	Sectionalizer (M3-5T only)
n	2	Bolt, double arming, $\frac{5}{8}$ " req'd. length	ca	1	Deadend assembly, primary
o	1	Bolt, eye, $\frac{5}{8}$ " req'd. length	cc	1	Deadend assembly, neutral
p		Connectors as req'd.	cm	1	Insulator, spool
ae	1	Arrester, lightning	em	2	Brace, crossarm, $1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{4}$ " angle
			dy	1	Bolt, eye, double arming, $\frac{5}{8} \times 14$ min.

7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
ONE SECTIONALIZER OR RECLOSER AT TAP

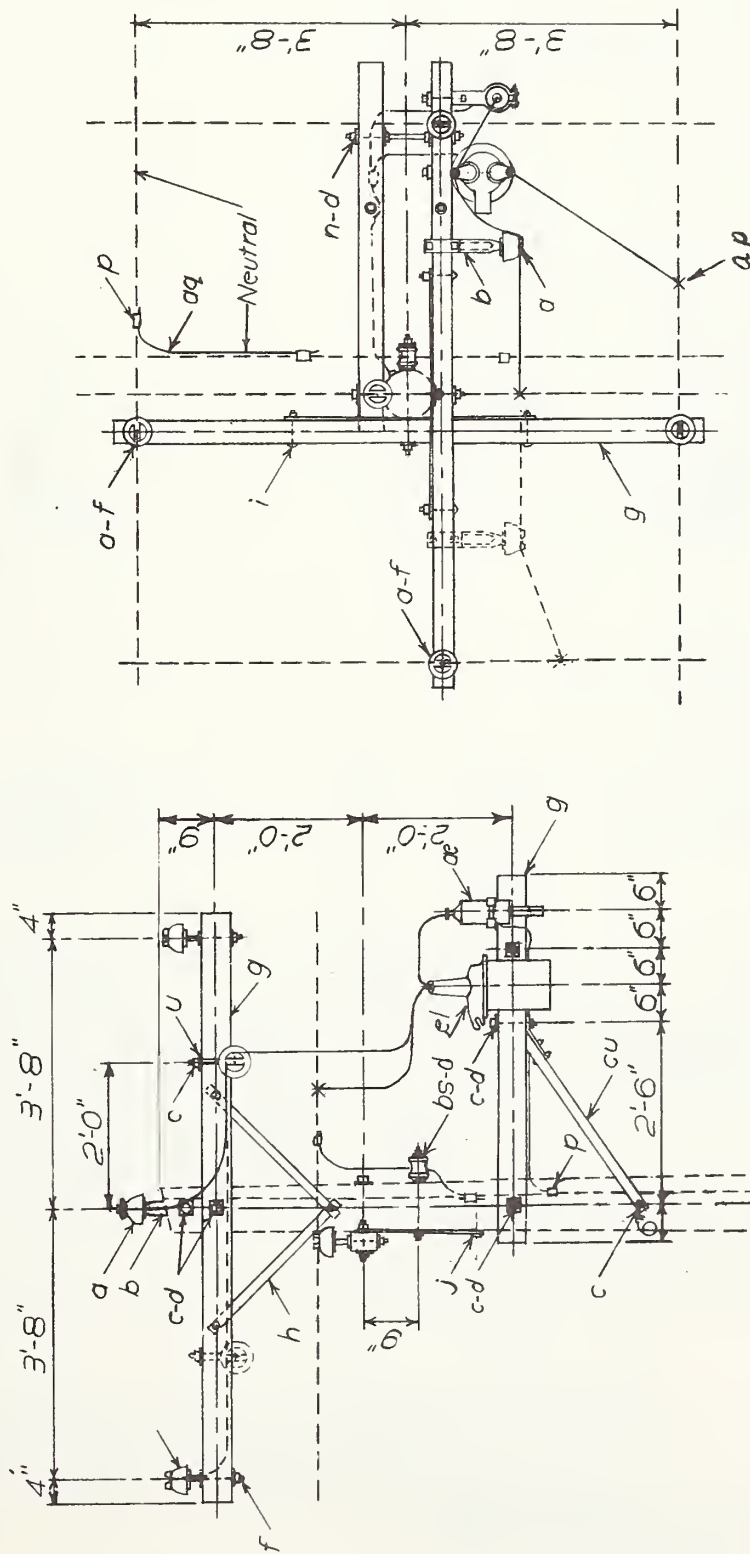
Scale:  $\frac{1}{2}$ " = 1'-0"

Date: Nov. 13, 50

M3-5T, M3-10T

No.	REVISION	DATE
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ITEM	No. Req'd	MATERIAL
a	6	Insulator, pin type
b	2	Pin, pole top, 15"
c	7	Bolt, machine, 3/8" x req'd length
c	2	Bolt, machine, 1/2" x req'd length
d	13	Washer, 2 1/2" x 3/4", 1 1/2" hole
d	2	Washer, round, 1 1/2" dia., 3/8" hole
f	4	Pin, crossarm, steel, 1/2" x 10 1/2"
g	2	Crossarm, 3 1/2" x 4 1/2" x 8'-0"
g	2	Crossarm, 3 1/2" x 4 1/2" x 5'-0"
h	4	Brace, flat, 1 1/2" x 1/4" x 28"
i	4	Bolt, carriage, 3/8" x 4 1/2"
j	2	Screw, lag, 1/2" x 4"
n	1	Bolt, doubling arming, 1/2" x req'd length
p		Connectors, as req'd
u	1/2	Clamp, guy, 3-bolt, 6"
oe	1	Lightning arrester
ap	2	Clamp, hot line, tap assembly
aq		Leads and jumpers as req'd
bs	1	Bolt, single upset, insulated
cu	2	Brace, crossarm, wood, 60" span
el	1	Sectionalizer



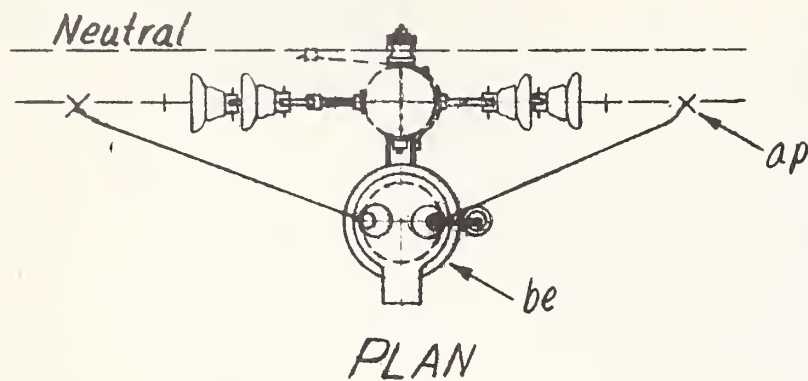
PLAN

ELEVATION

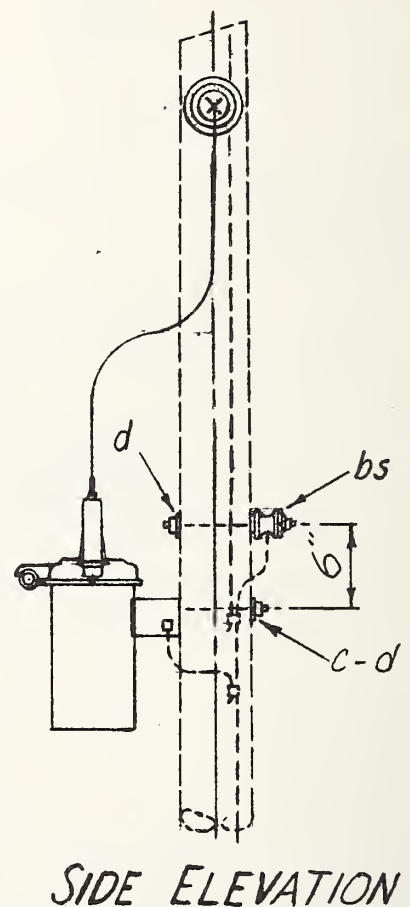
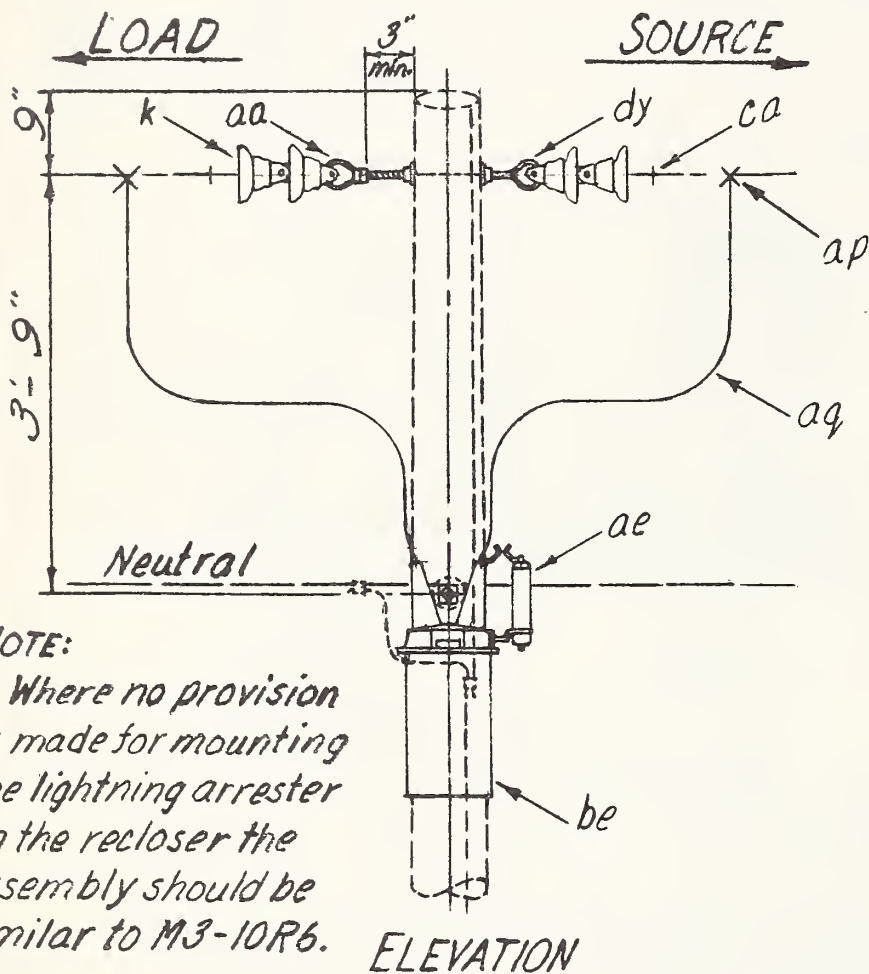
7.2/12.5 KV. PRIMARY, 3-PHASE, 4-WIRE STAR  
SINGLE PHASE JUNCTION WITH  
ONE SECTIONALIZER

Scale: 1/8" = 1'-0"  
Date: June 16, 50  
M3-6R

No.	REVISION	DATE
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**NOTE:**  
The terminal bushing connected directly to the coil should be connected to the source. Where necessary to provide for this connection the recloser may be mounted on the other side of the pole and the neutral deadended.



**NOTE:**

Where no provision is made for mounting the lightning arrester on the recloser the assembly should be similar to M3-10R6.

ITEM	NO. REQD.	MATERIAL	ITEM	NO. REQD.	MATERIAL
c	1	Bolt, machine, $\frac{7}{8}$ " x reg'd. length	ae	1	Lightning arrester
d	4	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{7}{16}$ " hole	bs	1	Bolt, single upset, insulated
k	4	Insulator, suspension	ca	2	Deadend assembly, primary
aa	1	Nut, eye, $\frac{7}{8}$ "	dy	1	Bolt, eye, double arming, $\frac{7}{8}$ "
ap	2	Clamp, hot line, tap assembly	p		Connectors, as required
aq		Leads or jumpers, as req'd.			
be	1	Recloser, oil circuit			

72/125KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUNDED  
ONE SECTIONALIZING OIL CIRCUIT RECLOSER

Scale:  $\frac{1}{2}$ " = 1'-0"

Date: Dec. 27, 1950

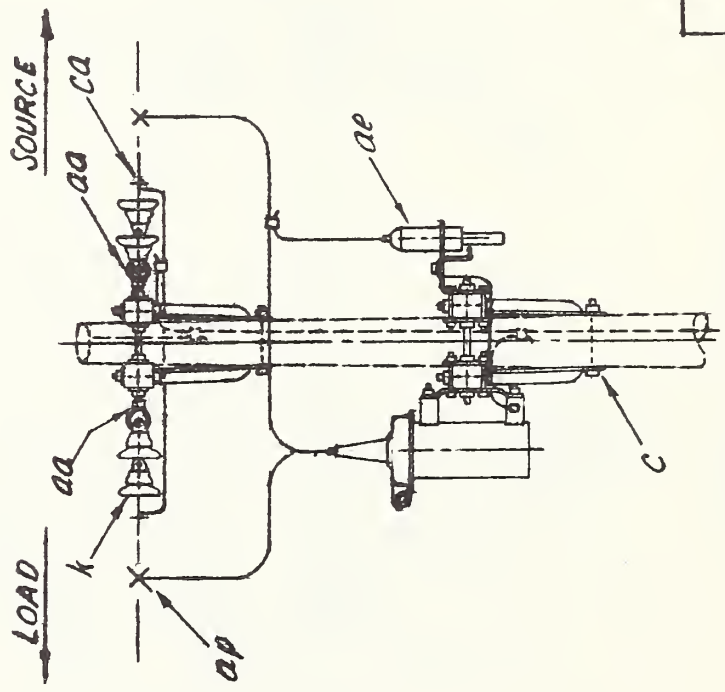
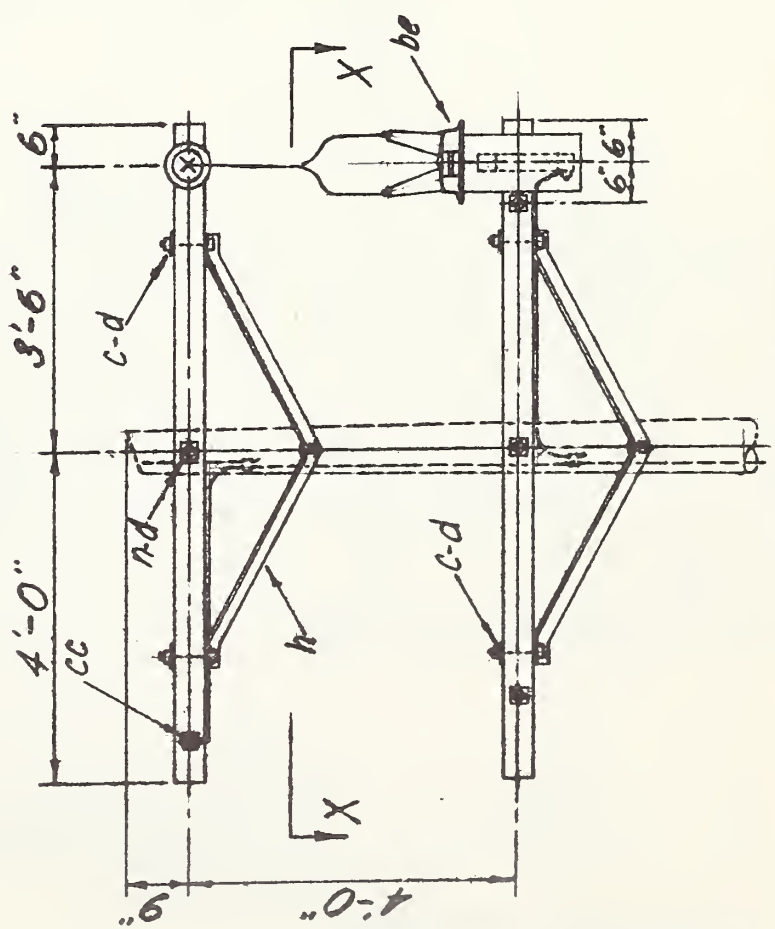
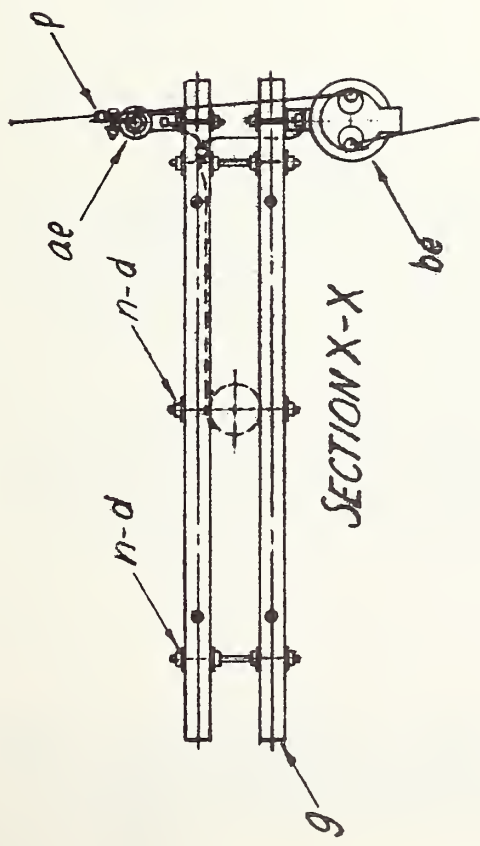
No.	REVISION	DATE
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M3-10R5

ITEM NO.	REMARKS	MATERIAL
c	8	Bolt, machine, 1/2 x regd. lenth.
c	2	Bolt, machine, 5/8 x regd. lenth.
d	8	Washer, Rd, 1/2 dia. 3/16 hole
d	20	Washer, 2 1/4 x 2 1/4 x 3/16, 13/16 hole
g	4	Crossarm, 3/2 x 4 1/2 x 8'-0"
h	4	Brace, angle, 1 1/2 x 1 1/2 x 5/8, 60 spec
n	6	Bolt, double arm, 5/8 x regd. lenth
k	4	Insulator, suspension
p		Connectors, as required
aa	4	Nut, eye, 5/8"
ap	2	Clamp, hot line, tap assembly
aq		Leads, as required
ae	1	Lightning arrester
be	1	Recloser, oil circuit
ca	2	Deadend assembly, primary
cc	2	Deadend assembly, neutral

NOTES:

1. The recloser terminal bushing connected directly to the coil should be connected to the source.
2. Lower crossarms may be changed to half length crossarms and wood braces or to extended metal pole brackets as desired.

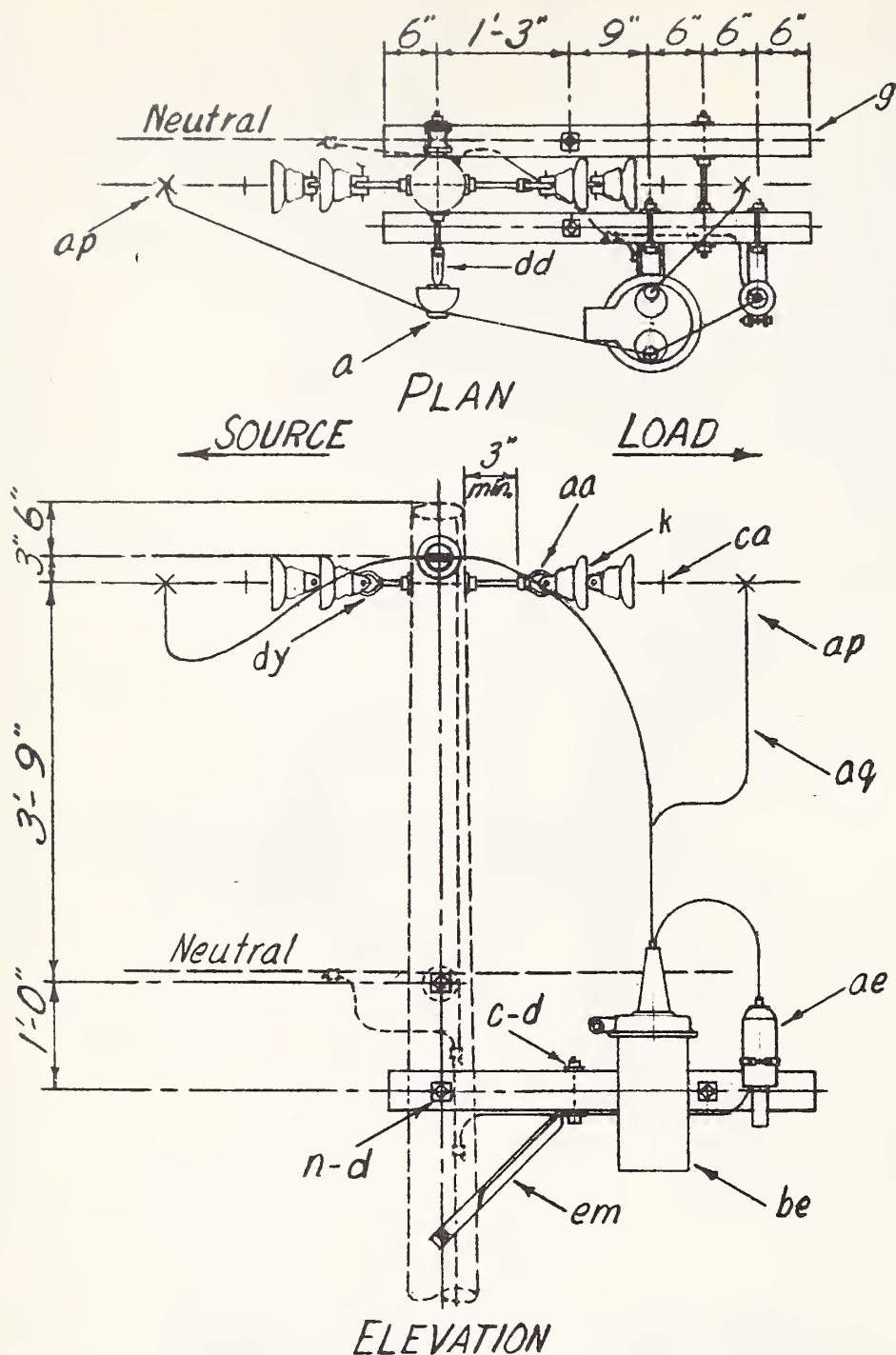


SIDE ELEVATION

ELEVATION

240/440V, PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GND'D.  
 ONE SECTIONALIZING OIL CIRCUIT RECLOSER  
 Scale: 1/4" = 1'-0"  
 Date: Feb 24, 50  
 WJ-1 Q.A

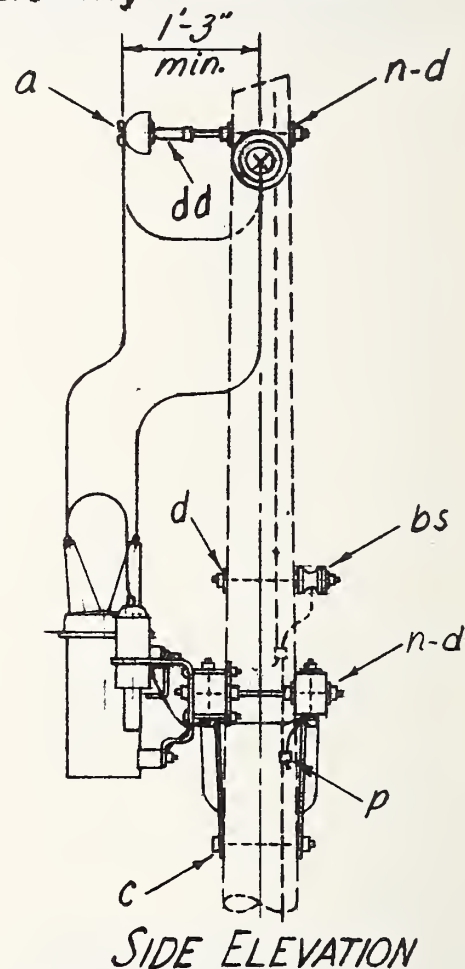
NO.	REVISION	DATE:



NOTE:

Where necessary to connect the source lead to the other terminal the recloser or sectionalizer should be mounted on the other crossarm and the neutral deadended.

For method of mounting the larger reclosers refer to drawing VM3-10R6.



ITEM	NO. REQD.	MATERIAL	ITEM	NO. REQD.	MATERIAL
a	1	Insulator, pin type	ag		Jumpers and leads as req'd.
c	3	Bolt, machine, $\frac{5}{8}$ " x req'd. length	be	1	Recloser, oil circuit (M3-10R6 only)
d	13	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ hole	bs	1	Bolt, single upset, insulated
g	2	Crossarm, $3\frac{1}{2}$ " x $4\frac{1}{2}$ " x 4'-0"	ca	2	Deadend assembly, primary
k	4	Insulator, suspension	dd	1	Adapter, insulator
n	3	Bolt, double arming, $\frac{5}{8}$ " x req'd. lgth.	dy	1	Bolt, eye, double arming, $\frac{5}{8}$ "
p		Connectors, as required	em	2	Brace, crossarm, angle, $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{3}{16}$
aa	1	Nut, eye, $\frac{5}{8}$ "	el	1	Sectionalizer (M3-40 only)
ae	1	Lightning arrester			
ap	2	Clamp, hot line, tap assembly			

7.2/12.5 KV. PRIMARY, 1-PHASE 2-WIRE, NEUTRAL GROUND  
ONE SECTIONALIZER OR OIL CIRCUIT RECLOSER

Scale:  $\frac{1}{2}$ " = 1'-0"

Date: Jan. 4, 1951

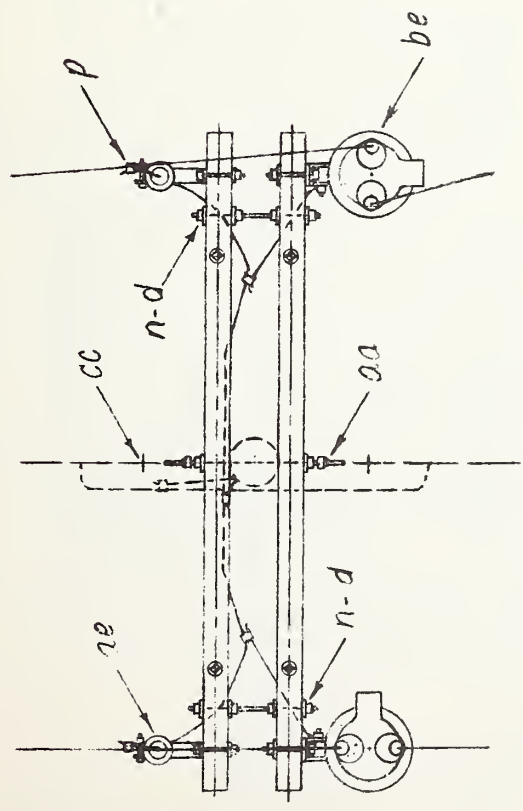
No. REVISION DATE:

M3-10R6, M3-40

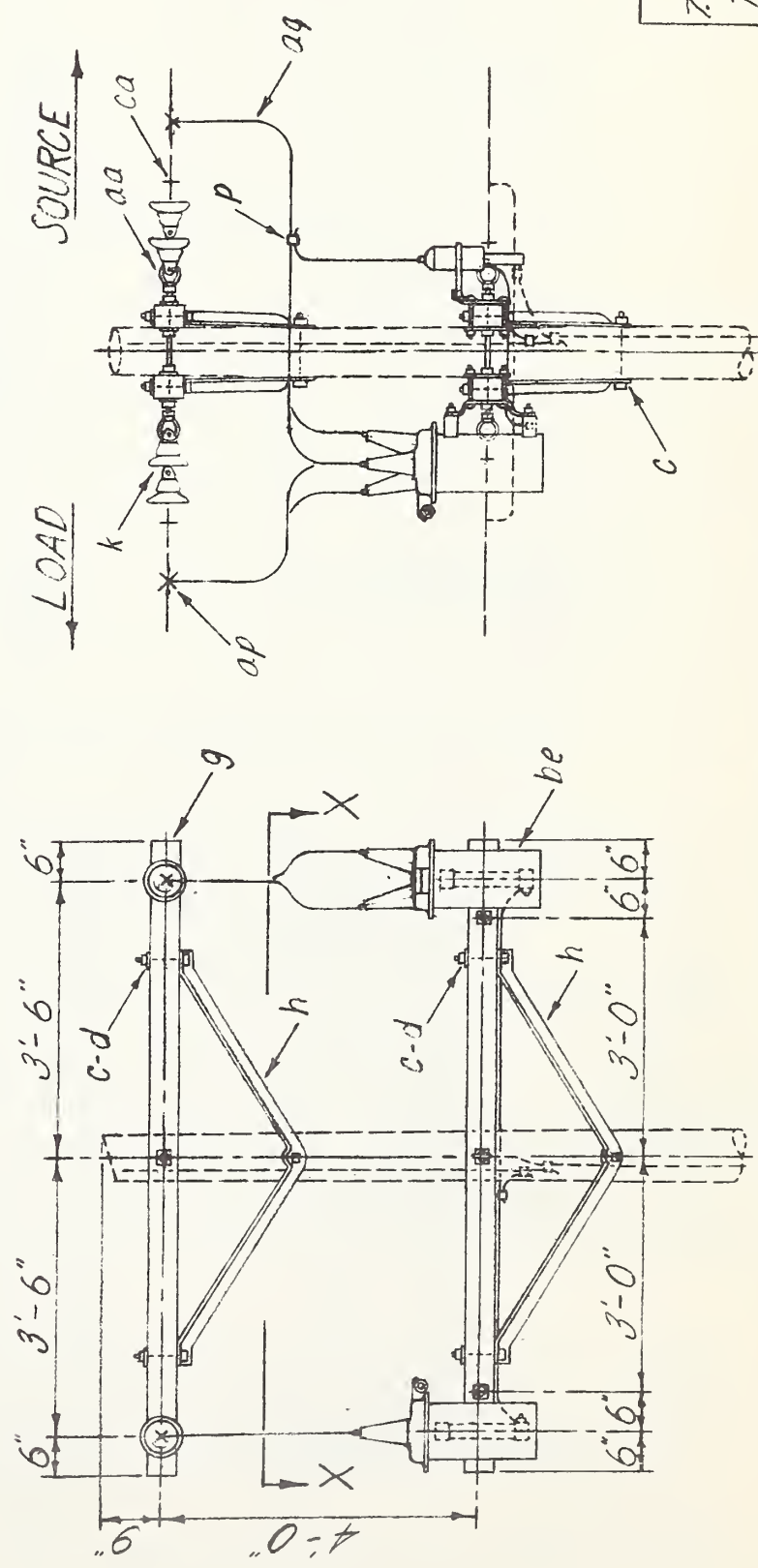
ITEM	NO.	REMARKS	MATERIAL
C	8	Bolt, machine, 1/2" x regd. length	
C	3	Bolt, machine, 3/8" x regd. length	
d	8	Washer, Rd. 1 1/8" dia., 9/16" hole	
d	20	Washer, 2 1/4" x 5/16" x 9/16", 3/16" hole	
g	4	Crossarm, 3 1/2" x 4 1/2" x 8'-0"	
h	4	Brace, 1 1/2" x 1 1/2" x 3/16", 60" span	
k	8	Insulator, suspension	
n	6	Bolt, double arming, 3/8" x regd. length	
p		Connectors, as required	
aa	6	Nut eye, 9/8"	
ap	4	Clamp, hot line, tap assembly	
ae	2	Lightning arrester	
ag		Jumpers and leads as reqd.	
be	2	Recloser, oil circuit	
ca	4	Deadend assembly, primary	
cc	2	Deadend assembly, neutral	

NOTE:

Where required to facilitate the connection of the source lead to the coil bushing, the reclosers should be rotated as required.



SECTION X-X



ELEVATION

SIDE ELEVATION

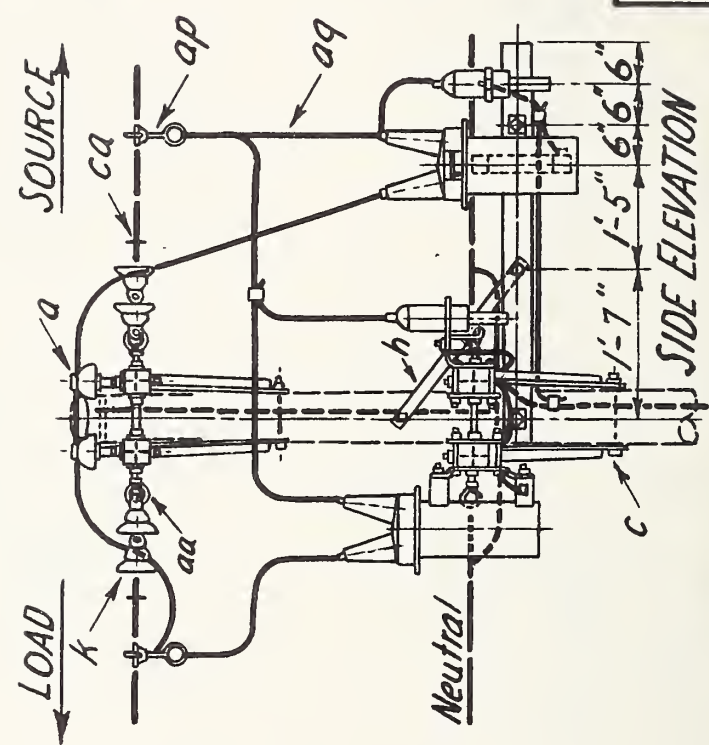
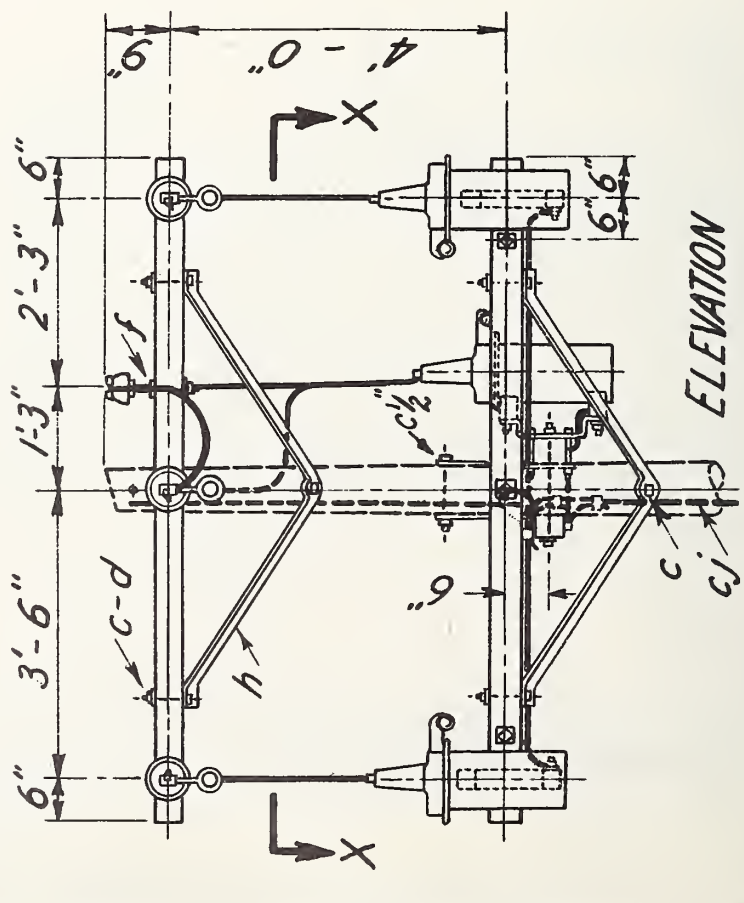
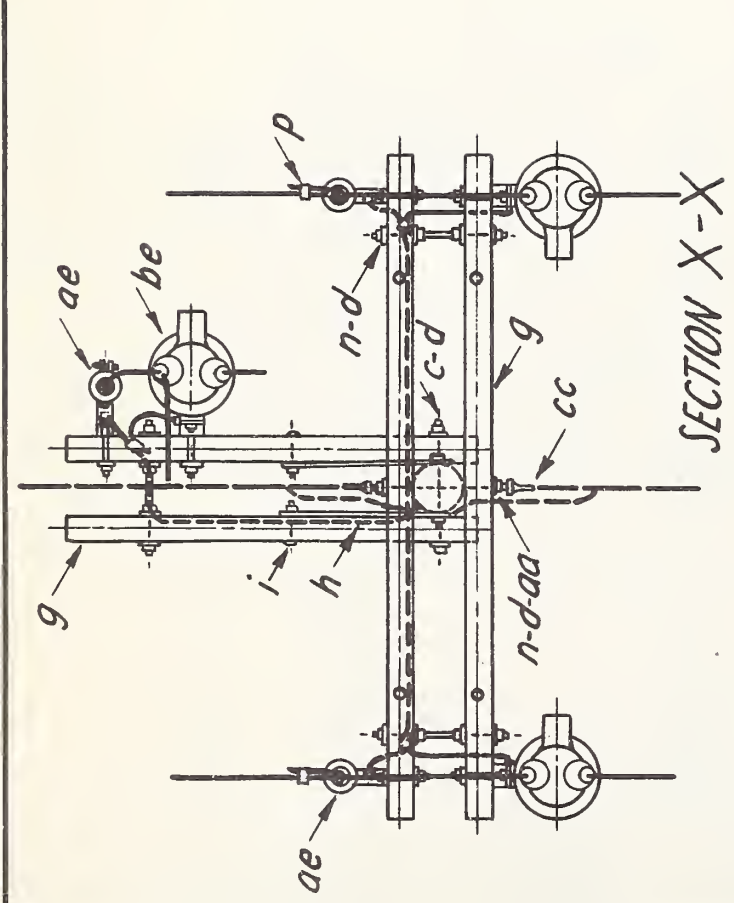
7.2/125KV PRIMARY 2-PHASE WIRES AND NEUTRAL  
TWO SECTIONALIZING OIL CIRCUIT RECLOSERS  
Scale: 3/8"=1'-0"  
Date: Jan 8, 1951  
N 3-11R

NO.	REVISION	DATE

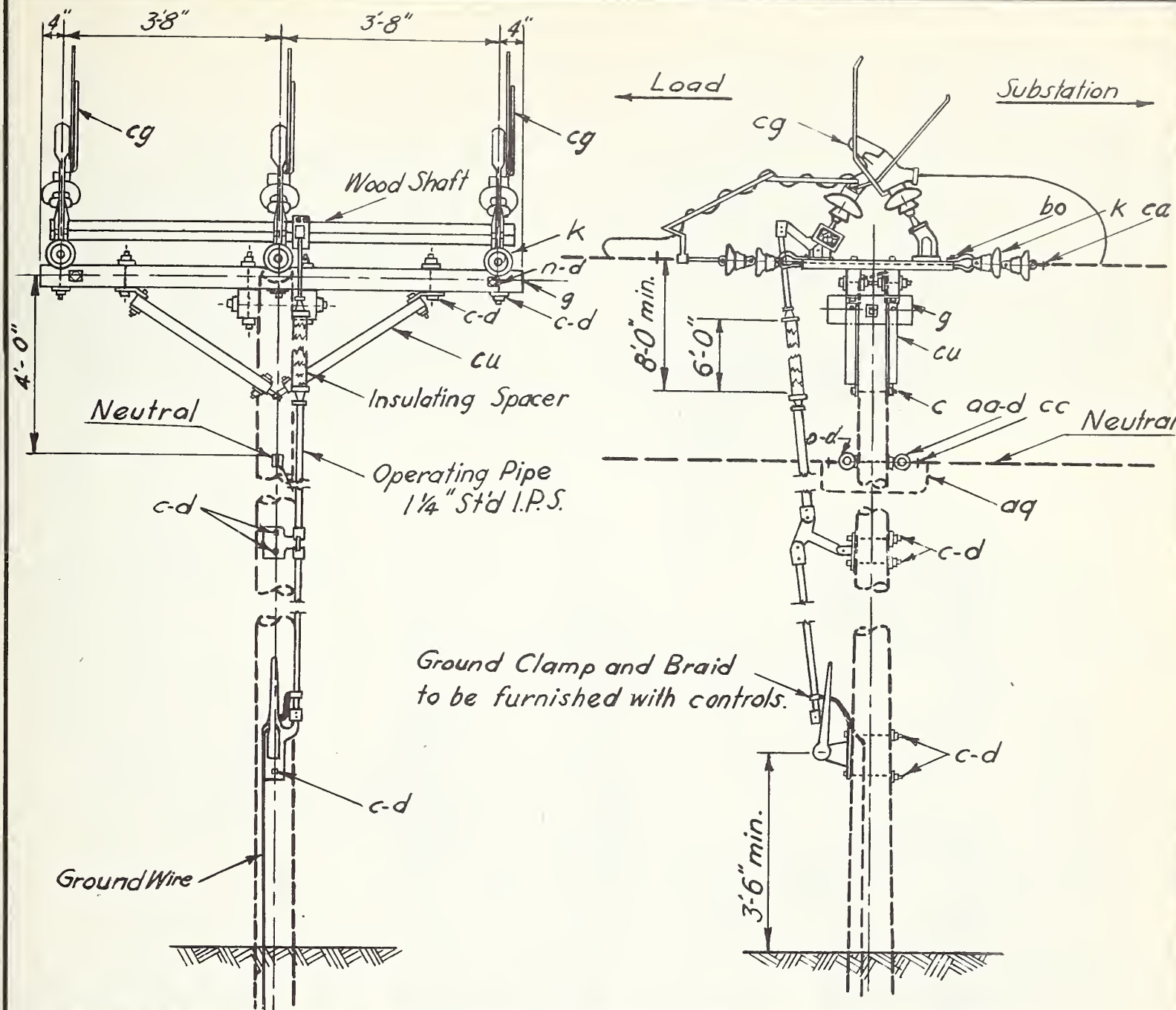
ITEM	QTY	MATERIAL
a	2	Insulator, pin type
c	9	Bolt, machine, 1/2" x req'd length
c	3	Bolt, machine, 3/8" x req'd length
d	8	Washer, Rd, 1/8" diam, 3/16" hole
d	26	Washer, 2 1/4" x 2 1/4" x 3/16" hole
f	2	Pin, crossarm, steel, 3/8" x 10 3/4"
g	4	Crossarm, 3 1/2" x 4 1/2" x 8" 0" 1/8"
g	2	Crossarm, 3 3/4" x 4 3/4" x 5" 0" 1/8"
h	2	Brace, 1 1/4" x 1/4" x 28"
h	4	Brace, 1 1/2" x 1 1/2" x 3/16", 60° span
i	2	Bolt, carriage, 3/8" x 4 1/2"
k	12	Insulator, suspension
n	7	Bolt, double arm, 3/8" x req'd lg.
p		Connectors, as req'd.
aa	8	Nut, eye, 3/8"
ai	1	Rod, ground, 3/8" diam. min.
aj	1	Clamp, ground rod
al		Staples, ground wire, as req'd.
ap	6	Clamp, hot line, tap assembly
aq		Leads, as req'd.
ae	3	Lightning arrester
be	3	Recloser, oil circuit
ca	6	Deadend assembly, primary
cc	2	Deadend assembly, neutral
cj		Ground wire, 6.5 D copper or equiv.

NOTE:  
Extended deadends should be used on the middle phase where desirable to provide for hot line maintenance in accordance with hot line procedures.

KV PRIMARY, 3-PHASE 4-WIRE STAR  
THREE SECTIONALIZING OIL CIRCUIT RECLOSERS  
Scale: 3/64" = 1'-0"  
Date: May 24, 1948  
M3-12R



NO.	REVISION	DATE



**NOTES:**

Operating handle to be provided with means of locking (Podlock) in open and closed position.  
 Ground operating-handle as shown in drawing above to ground rod.

ITEM	NO. REQ'D.	MATERIAL	ITEM	NO. REQ'D.	MATERIAL
c	4	Bolt, machine, 1/2" x req'd. length	aa	1	Nut, eye 5/8"
c	16	Bolt, machine, 5/8" x req'd. length	cg	1	Switch, airbreak, 3 pole unit, 15 KV. with operating mechanism.
d	30	Washer, 2 1/4" x 2 1/4" x 3/16", 7/16" hole	bo	6	Shackle, anchor
d	4	Washer, 2" x 2" x 1/8", 9/16" hole	ca	6	Dead end assembly, Primary
cu	4	Crossarm brace, wood, 60" span	cc	2	Dead end assembly, Neutral
k	12	Insulator, suspension	g	2	Crossarm, 3 1/2" x 4 1/2" x 8'-0"
n	2	Bolt, double arming, 5/8" x req'd. length	aq		Jumpers
p		Connectors as req'd.			

o	1	Bolt, eye, 5/8" x req'd length
g	2	Crossarm, bracket 3 1/2" x 4 1/2" x 1'-6"

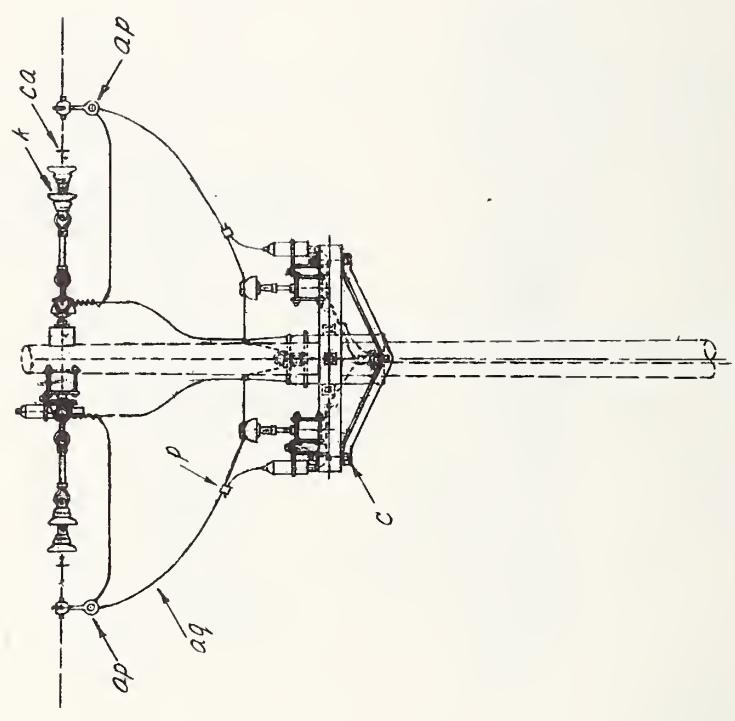
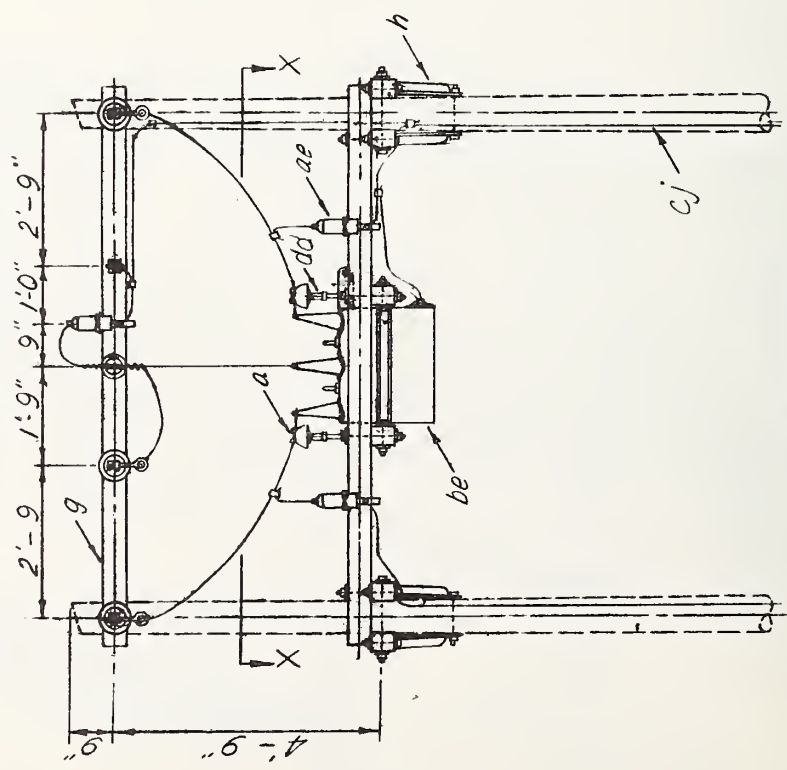
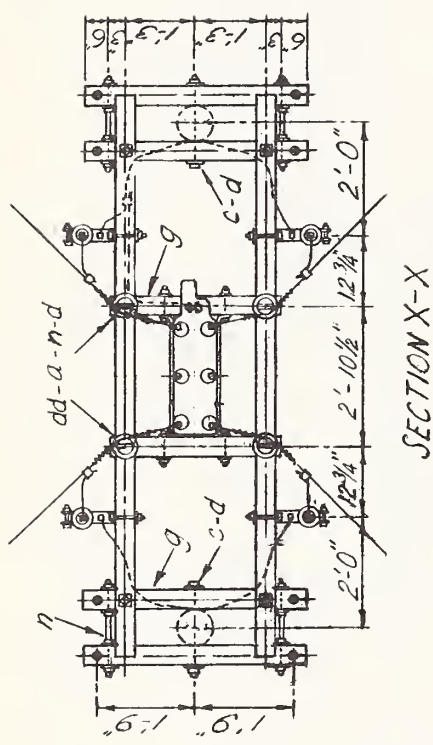
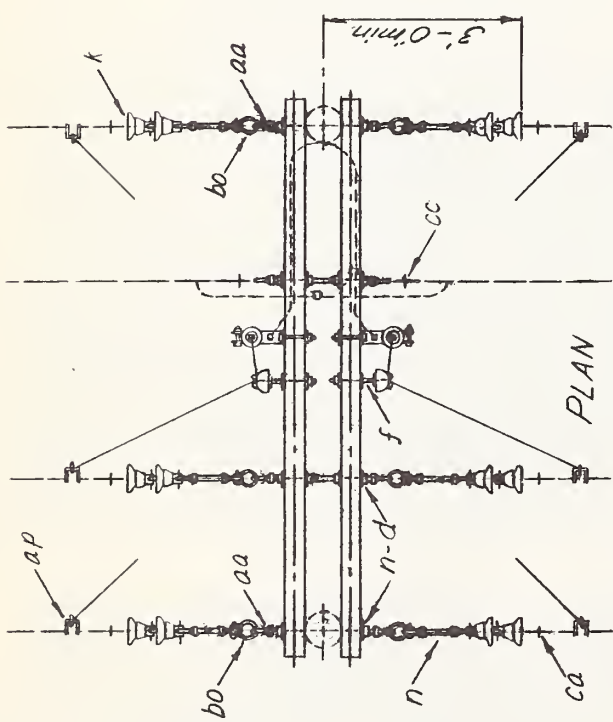
**-----KV. PRIMARY, 3-PHASE 4-WIRE STAR SECTIONALIZING AIR BREAK SWITCH**

Scale: 3/8" = 1'-0"

Date: **M3-15**

NO.	REVISION	DATE:
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ITEM	NO. REQD.	MATERIAL
a	6	Insulator, pin type
c	8	Bolt, machine, $\frac{5}{8}$ " x reg. d. lgh.
c	12	Bolt, machine, $\frac{1}{2}$ " x reg. d. lgh.
d	40	Washer, $2\frac{1}{4}$ " x $2\frac{1}{4}$ " x $\frac{3}{16}$ ", $\frac{13}{16}$ " hole
f	2	Pin, crossarm, steel, $\frac{5}{8}$ " x $10\frac{3}{4}$ "
g	4	Crossarm, $3\frac{3}{4}$ " x $4\frac{3}{4}$ " x $10\frac{3}{4}$ "
g	4	Crossarm, $3\frac{3}{4}$ " x $4\frac{3}{4}$ " x $10\frac{3}{4}$ "
g	2	Crossarm, $3\frac{3}{4}$ " x $4\frac{3}{4}$ " x $10\frac{3}{4}$ "
h	4	Brace, angle, $1\frac{1}{2}$ " x $1\frac{1}{2}$ " x $\frac{1}{16}$ " x $4\frac{3}{4}$ "
k	12	Insulator, suspension
n	18	Bolt, double arming, $\frac{5}{8}$ " x reg. d. lgh.
p		Connectors, as reqd.
aa	20	Nut, eye $\frac{5}{8}$ "
ae	6	Lightning arrester
ap	6	Clamp, hot line, tap assembly
aq		Leads, as required
be	1	Recloser, oil circuit, 3H type
ca	6	Deadend assembly, primary
cc	2	Deadend assembly, neutral
cj	2	Ground wire assembly and rod
dd	4	Adapter, insulator

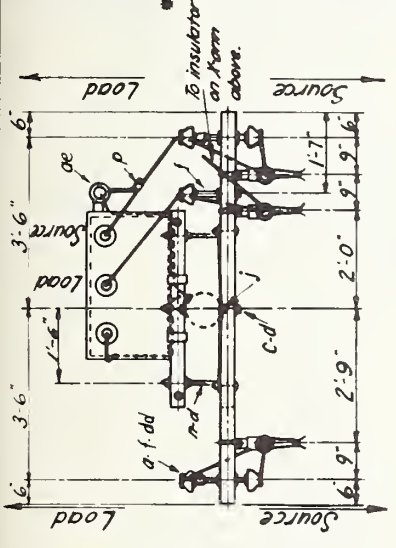


-----KV PRIMARY, 3-PHASE 4-WIRE STAR  
THREE PHASE OIL CIRCUIT RECLOSER  
Scale:  $\frac{3}{4}$ " = 1'-0"  
Date: June 16, 1948  
M3-22

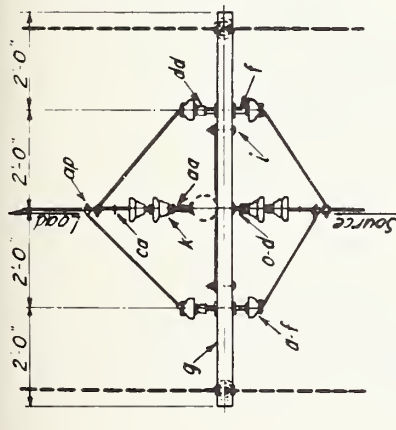
NO.	REVISION	DATE

ITEM No.	MATERIAL
1	Insulator, pin
2	Bolt machine, 1/2" x 4" length
3	Bolt machine, 1/2" x 4" length
4	Washer 2 1/2" x 3/8" x 1/2", 1/2" hole
5	Washer 2 1/2" x 3/8" x 1/2", 1/2" hole
6	Pin crossarm, steel, 1/2" x 1/2" x 10"
7	Pin crossarm, steel, 1/2" x 1/2" x 10"
8	Crossarm, 3/4" x 1/2" x 10"
9	Crossarm, 3/4" x 1/2" x 10"
10	Crossarm, 3/4" x 1/2" x 10"
11	Crossarm, 3/4" x 1/2" x 10"
12	Crossarm, 3/4" x 1/2" x 10"
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20	Crossarm, 3/4" x 1/2" x 10"
21	Crossarm, 3/4" x 1/2" x 10"
22	Crossarm, 3/4" x 1/2" x 10"
23	Crossarm, 3/4" x 1/2" x 10"
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68	Crossarm, 3/4" x 1/2" x 10"
69	Crossarm, 3/4" x 1/2" x 10"
70	Crossarm, 3/4" x 1/2" x 10"
71	Crossarm, 3/4" x 1/2" x 10"
72	Crossarm, 3/4" x 1/2" x 10"
73	Crossarm, 3/4" x 1/2" x 10"
74	Crossarm, 3/4" x 1/2" x 10"
75	Crossarm, 3/4" x 1/2" x 10"
76	Crossarm, 3/4" x 1/2" x 10"
77	Crossarm, 3/4" x 1/2" x 10"
78	Crossarm, 3/4" x 1/2" x 10"
79	Crossarm, 3/4" x 1/2" x 10"
80	Crossarm, 3/4" x 1/2" x 10"
81	Crossarm, 3/4" x 1/2" x 10"
82	Crossarm, 3/4" x 1/2" x 10"
83	Crossarm, 3/4" x 1/2" x 10"
84	Crossarm, 3/4" x 1/2" x 10"
85	Crossarm, 3/4" x 1/2" x 10"
86	Crossarm, 3/4" x 1/2" x 10"
87	Crossarm, 3/4" x 1/2" x 10"
88	Crossarm, 3/4" x 1/2" x 10"
89	Crossarm, 3/4" x 1/2" x 10"
90	Crossarm, 3/4" x 1/2" x 10"
91	Crossarm, 3/4" x 1/2" x 10"
92	Crossarm, 3/4" x 1/2" x 10"
93	Crossarm, 3/4" x 1/2" x 10"
94	Crossarm, 3/4" x 1/2" x 10"
95	Crossarm, 3/4" x 1/2" x 10"
96	Crossarm, 3/4" x 1/2" x 10"
97	Crossarm, 3/4" x 1/2" x 10"
98	Crossarm, 3/4" x 1/2" x 10"
99	Crossarm, 3/4" x 1/2" x 10"
100	Crossarm, 3/4" x 1/2" x 10"

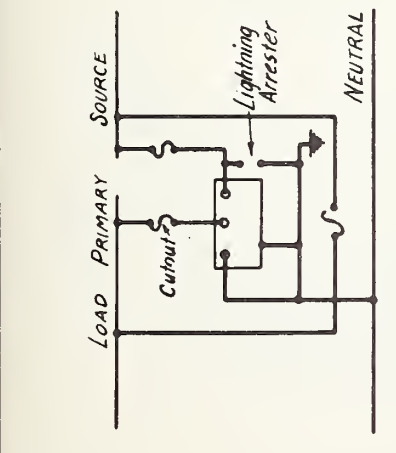
\* Required for platform mounted regulator.



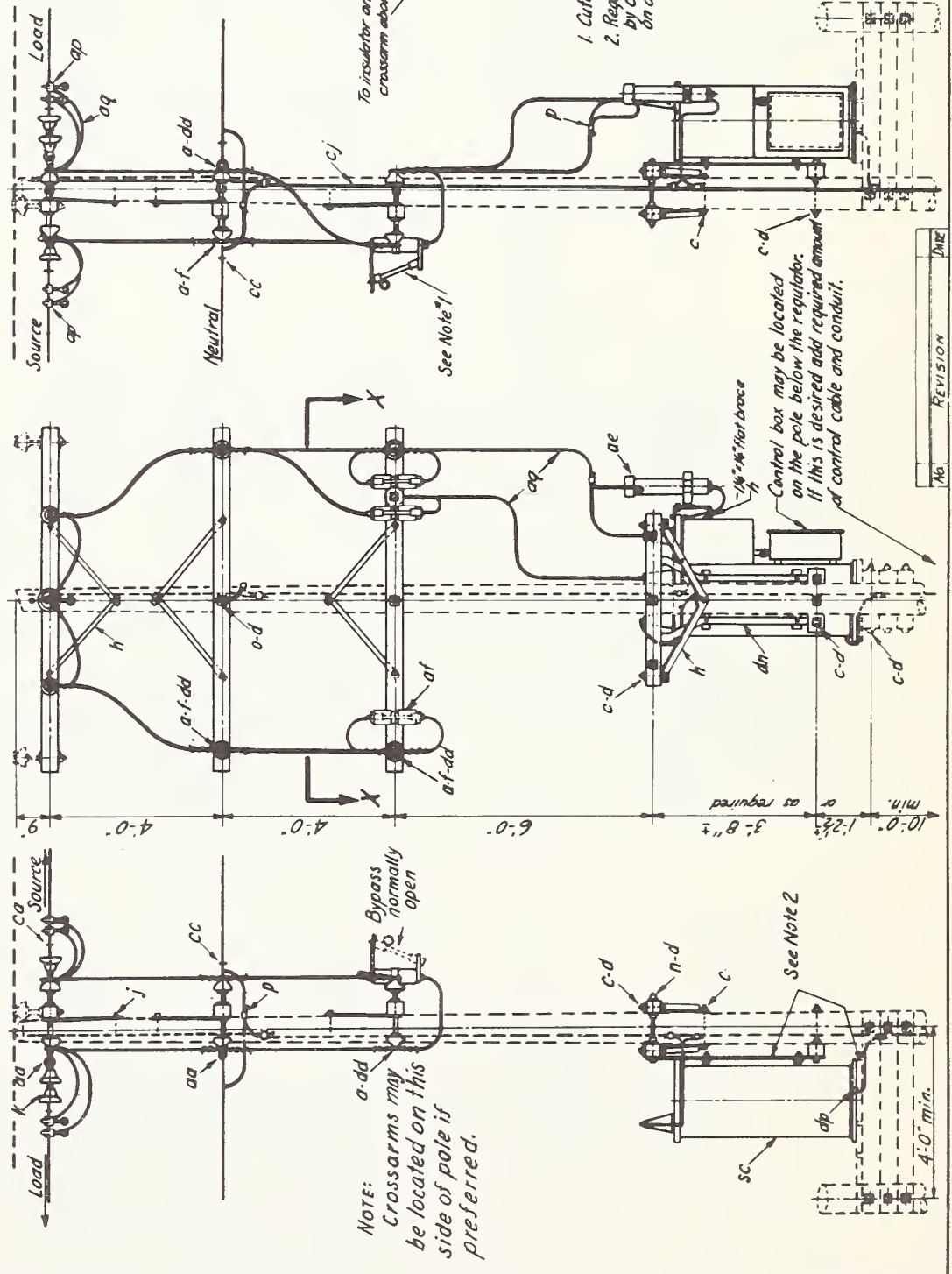
SECTION X-X



PLAN



WIRING DIAGRAM



SECTION X-X FOR REGULATORS WITH POCKET BUSHINGS

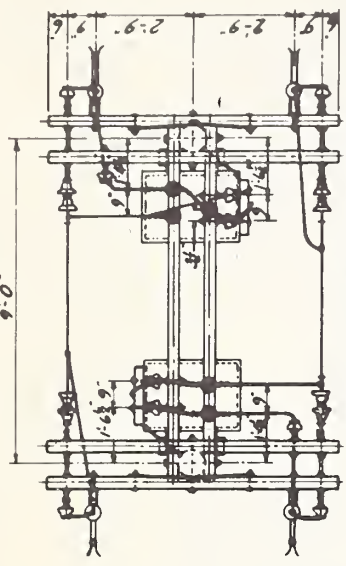
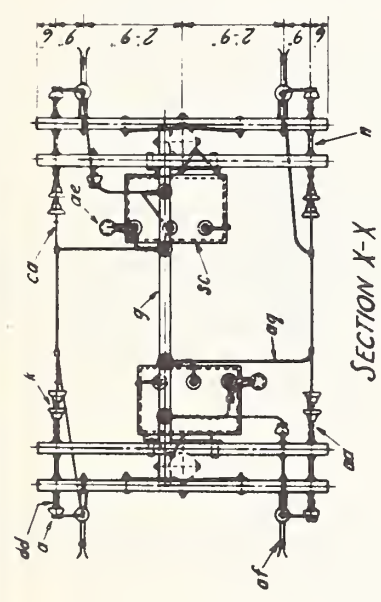
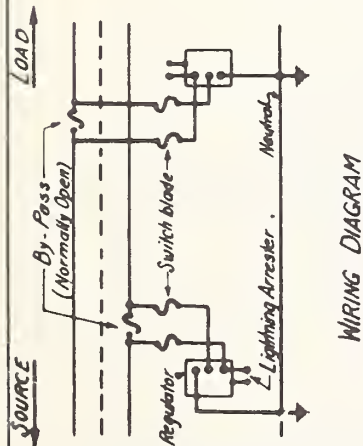
NOTES

1. Cutouts should be provided with switch blades.
2. Regulators of 17.3 kva and smaller to be supported on pole by crossarm hangers. Larger regulators to be supported on a platform as shown in dotted lines.

V. PRIMARY 1-PHASE 2-WIRE, NEUTRAL GROUND  
STEP-VOLTAGE REGULATOR ASSEMBLY  
POLE OR PLATFORM MOUNTED

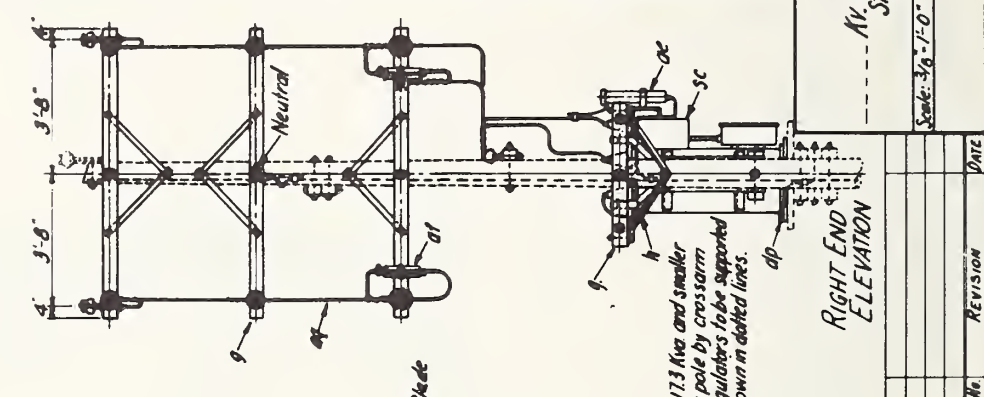
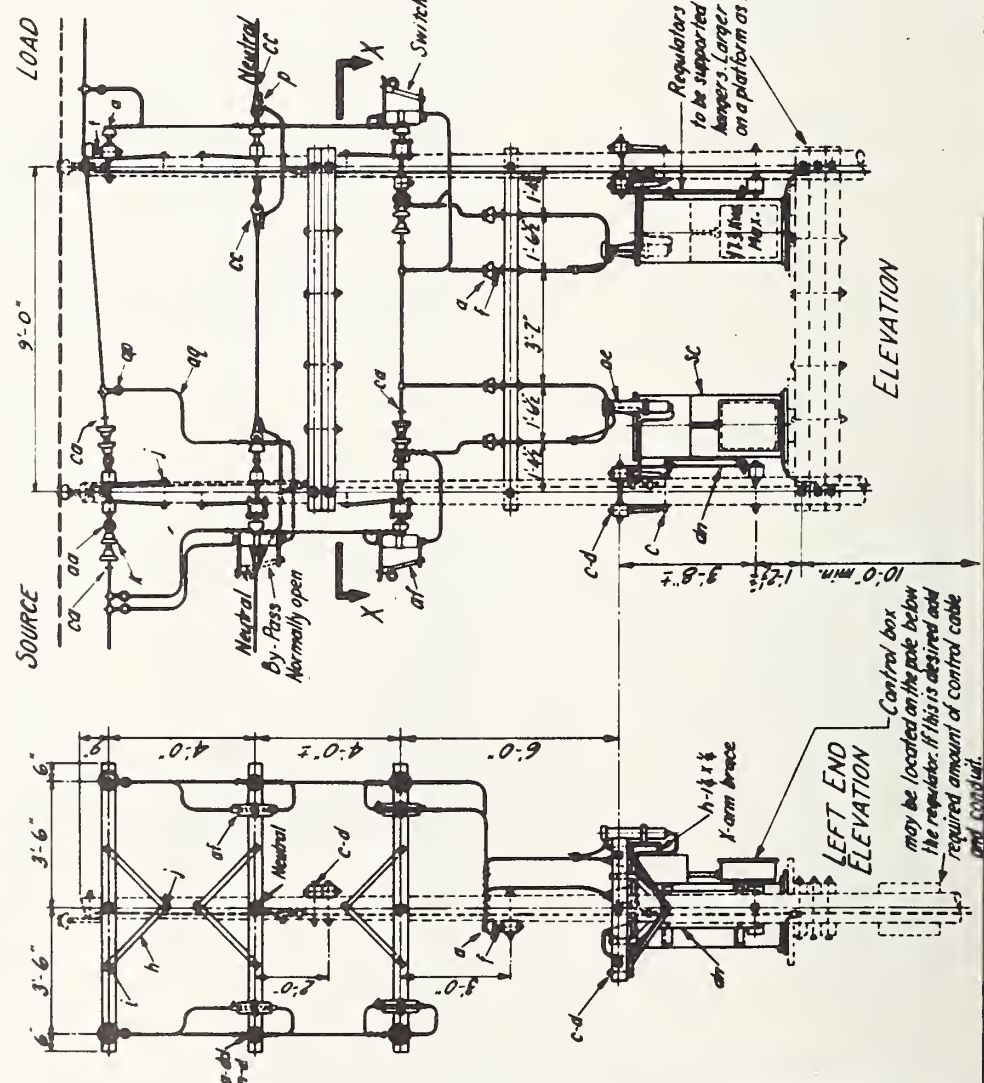
Date: June 18, 1960  
Scale: 1/2" = 1'-0"  
M7-1

No.	REVISION	DATE



SECTION X-X SHOWING ASSEMBLY FOR REGULATORS WITH POCKET BUSHINGS

**NOTES:**  
For future three-phasing it is suggested that the third regulator be mounted on an adjacent pole as shown on Dwg. "M7-1" for a single phase assembly.



**LIST OF MATERIAL**

Qty	Material
10	Insulator, pin type
8	Bolt machine, 1/2" x req'd length
24	Bolt machine, 3/8" x req'd length
8	Washer, round 1/2" dia. 3/16" hole
12	Washer, 2 1/2" x 3/16", 13/16" hole
12	Pin, crossarm, steel, 3/8" x 10 1/2"
5	Crossarm, 3/4" x 4 1/2" x 8'-0" lg.
3	Crossarm, 3/4" x 4 1/2" x 10'-0" lg.
16	Brace, 1 1/4" x 1/2" x 2'-0"
4	Brace, angle, 1 1/2" x 1/2" x 3/16", 42" span
14	Bolt, carriage, 3/8" x 4 1/2"
7	Screw, lag, 1/2" x 4"
16	Insulator suspension
14	Bolt, double aiming, 3/8" x req'd length
2	Connectors, as req'd
12	Nut eye, 3/8"
2	Lightning arrester
6	Cutout fuse, single shot, open type
2	Head, ground, 3/8" dia. min.
2	Clamp, ground rod
1	Staples, ground wire, as req'd.
8	Clamp, hot line, tap assembly
1	Leads, as req'd.
2	Regulator
8	Deadend assembly, primary
4	Deadend assembly, neutral
1	Ground wire, #6 S.D. copper or equiv.
8	Adaptor, insulator
2	Clamp, ground wire
2	Regulator, step type.....KVA.

XV. PRIMARY TWO PHASE WIRES AND NEUTRAL STEP-VOLTAGE REGULATOR ASSEMBLY POLE OR PLATFORM MOUNTED

Date: June 21, 1948  
M7-2

Scale: 3/8" = 1'-0"

No.	Revision	Date







































































































































